KARABÜK ÜNİVERSİTESİ

ULUSLARARASI ÖĞRENCİ SEÇME SINAVI

THE ENTRANCE EXAMINATION FOR FOREIGN STUDENTS

KBU-ULOS 2020

MATEMATİK VE TEMEL ÖĞRENME BECERİLERİ TESTİ
THE MATHEMATICS & BASIC LEARNING SKILLS TEST
اختبار الرياضيات ومهارات التعليم الأساسية

4/B

ADAYIN / APPLICANT'S	
ADI / NAME / الاسم	
SOYAD / SURNAME /اللقب	
ADAY NUMARASI / CANDIDATE NUMBER/رقم الطالب	
SINAV SALON NO / EXAM ROOM NUMBER / رقم قاعة الاختبار	

DİKKAT EDİLMESİ GEREKLİ HUSUSLAR

1. **Bu soru kitapçığı 80 sorudan oluşmaktadır ve verilen cevaplama süresi 120 dakikadır.**
2. **İlk 30 dakika ve son 15 dakika sınav bitirilmiş olsa bile sınav salonundan çıkmak yasaktır.**
3. **Soru kitapçık türünün cevap kağıdına kodlanması sınav değerlendirmesi için gereklidir.**
4. **Test kitapçığındaki her sorunun yalnızca bir doğru cevabı vardır.**
5. **Cevap kağıdına kodlamaları kurşun kalemle yapınız**

IMPORTANT NOTES FOR THE EXAM TAKERS

1. **This test has 80 questions and duration of the exam is 120 minutes.**
2. **It is not allowed to leave the exam room in the first 30 minutes and the last 15 minutes even if the exam has been completed**
3. **The coding of the booklet type is required for the examination marking.**
4. **Every question in the test book has only one correct answer.**
5. **Coding the answer sheet with a pencil**

ملاحظات يجب الانتباه لها

١. تحتوي ورقة الأسئلة على (٨٠) سؤالاً، والزمن المخصص للإجابة عنها (١٢٠) دقيقة.

٢. يمنع الخروج من قاعة الامتحان أول (٣٠) دقيقة من مدّة الامتحان، آخر (١٥) دقائق، حتى لو أتم الطالب الإجابة عن الأسئلة كلها.

٣. تظليل رمز نموذج الأسئلة (A-B-C) ضروري من أجل عملية التصحيح.

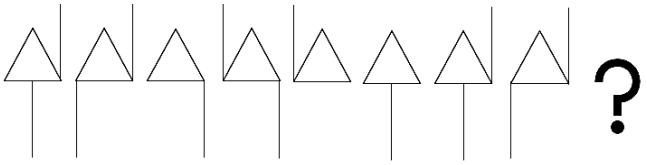
٤. كل سؤال يحتمل إجابة صحيحة واحدة فقط.

٥. يستعمل القلم الرصاص في تظليل ورقة الأجوبة.

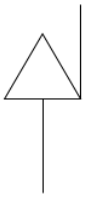
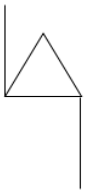
Sıra No	Ülkeler
1	Afganistan
2	Almanya
3	Arjantin
4	Arnavutluk
5	Azerbaycan
6	BAE (Birlesik Arap Emirlikleri)
7	Bahreyn
8	Banglades
9	Benin
10	Bosna-Hersek
11	Botsvana
12	Brezilya
13	Brunei
14	Bulgaristan
15	Burkina Faso
16	Burundi
17	Cad
18	Cezayir
19	Cibuti
20	Çad
21	Çin
22	Ekvador
23	Endonezya
24	Estonya
25	Etiyopya
26	Fas
27	Fildisi Sahili
28	Filipinler
29	Filistin
30	Finlandiya
31	Fransa
32	Güney Afrika
33	Gürcistan
34	Hindistan
35	Ingiltere
36	Irak
37	Iran
38	Israil
39	Isviçre
40	İngiltere
41	İspanya
42	Jamaika
43	Japonya
44	Kamboçya
45	Kamerun
46	Kanada
47	Karadağ
48	Katar
49	Kazakistan
50	Kenya

Sıra No	Ülkeler
51	Kırgızistan
52	Kosova
53	Kuveyt
54	Liberya
55	Libya
56	Lübnan
57	Malavi
58	Maldivler
59	Malezya
60	Mali
61	Meksika
62	Mısır
63	Mogolistan
64	Moldova
65	Moritanya
66	Myanmar
67	Nepal
68	Nijer
69	Nijerya
70	Özbekistan
71	Pakistan
72	Paraguay
73	Portekiz
74	Romanya
75	Rusya Federasyonu
76	Senegal
77	Singapur
78	Somali
79	Sudan
80	Suriye
81	Suudi Arabistan
82	Tacikistan
83	Tanzanya
84	Tayland
85	Tayvan
86	Togo
87	Tonga
88	Tunus
89	Türkiye
90	Türkmenistan
91	Uganda
92	Ukrayna
93	Uruguay
94	Ürdün
95	Yemen Halk Cum.
96	Yunanistan
97	Zambiya
98	Zimbabve
99	Diğer

1)



Yukarıdaki şekil dizisi periyodiktir. Bu dizinin sonuna aşağıdakilerden hangisi gelmelidir?

A)  B)  C) 

D)  E) 

2)

$$\frac{1}{4}+\frac{2}{5}+\frac{3}{4}+\frac{4}{5}+\frac{5}{4}+\frac{6}{5}+\ldots+\frac{19}{4}+4=?$$

A) 44 B) 45 C) 46 D) 47 E) 48

3) $y \neq 0$, $x \neq 0$,

$$\left(\frac{\frac{y}{x}-\frac{x}{y}}{\frac{1}{x}-\frac{1}{y}}\right).\left(\frac{x}{y-x}+\frac{y}{y+x}\right)=?$$

Üstteki ifadenin en sade şekli nedir?

A) $\frac{x+y}{y-x}$ B) $\frac{x-y}{x+y}$ C) $\frac{x^2+y^2}{x.y}$

D) $\frac{x^2-y^2}{x.y}$ E) $\frac{x^2+y^2}{y-x}$

4)

$$\left.\begin{array}{l} x=1,\overline{2} \\ y=2,\overline{4} \\ z=4,\overline{8} \end{array}\right\} \rightarrow \frac{x+y}{z}=?$$

A) $\frac{3}{4}$ B) $\frac{30}{44}$ C) $\frac{13}{24}$ D) $\frac{33}{24}$ E) $\frac{1}{2}$

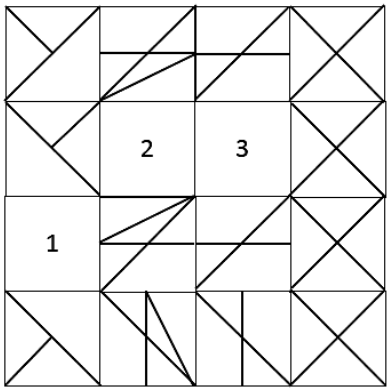
5) $\left(3^2+1\right)\left(3^4+1\right)\left(3^8+1\right)=X$

Verilen eşitliğe göre aşağıdakilerden hangisi 9^8 sayısına eşittir?

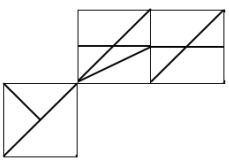
A) $8X$ B) $8X-1$ C) $8X+1$

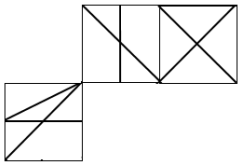
D) $8X+8$ E) $16X$

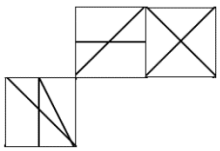
6)

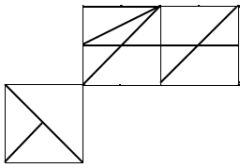


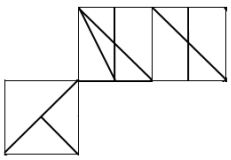
Üstteki figürde 1,2,3 rakamları ile numaralandırılmış yerlere gelecek motifler aşağıdakilerden hangisidir?

A) 

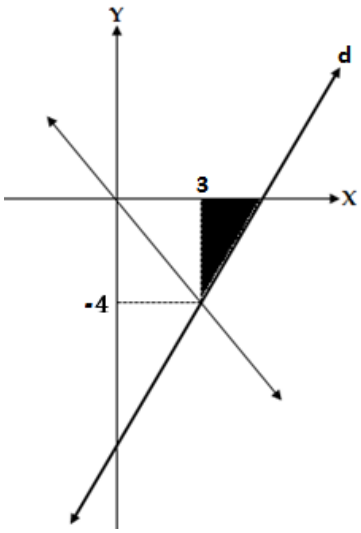
B) 

C) 

D) 

E) 

7)

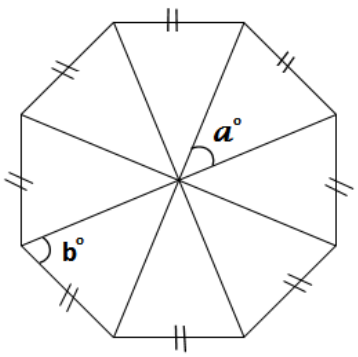


Koordinat sisteminde görülen siyaha boyalı bölgenin alanı $3cm^2$ dir. Yukarıdaki grafiğe göre d doğrusunun denklemi aşağıdakilerden hangisidir?

A) $y=\frac{3x-4}{12}$ B) $y=\frac{4x-3}{16}$ C) $y=\frac{8x-36}{3}$

D) $y=\frac{4x-18}{3}$ E) $y=\frac{3x-18}{8}$

8)

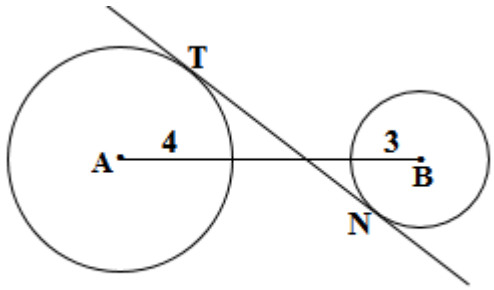


$$a^\circ + b^\circ = ?$$

A) $105{,}5^\circ$ B) $107{,}5^\circ$ C) 109°

D) $112{,}5^\circ$ E) 111°

9)

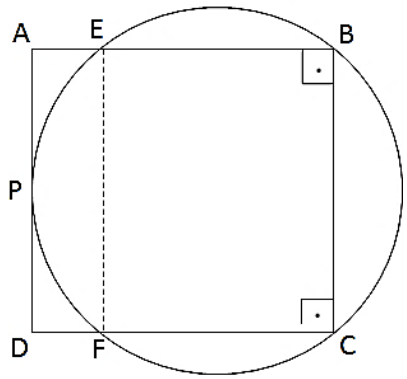


$|AB| = 14\ cm \rightarrow |TN| = ?$

Büyük çemberin yarıçapı 4cm, küçük çemberin yarıçapı 3cm dir. $[TN]$ çemberlere teğettir. $|TN| = ?$

A) $7\sqrt{3}$ B) $7\sqrt{2}$ C) $7\sqrt{5}$
D) $14\sqrt{2}$ E) $14\sqrt{5}$

10)



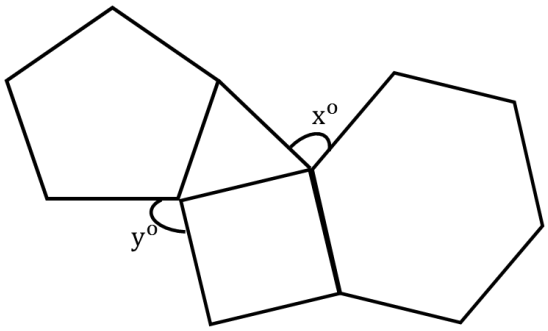
$|AP| = |PD| = 6\ cm$

$|AB| = |BC| = |CD| = |DA|$

EFCB dikdörtgenin alanı kaç cm^2 dir?

A) 96 B) 108 C) 112 D) 120 E) 156

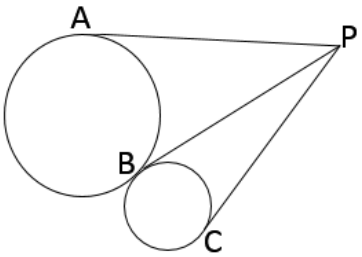
11)



Üstteki şekilde verilen çokgenlerin tüm kenarları birbirine eşittir. Buna göre $y - x = ?$

A) 22 B) 18 C) 16 D) 14 E) 12

12)



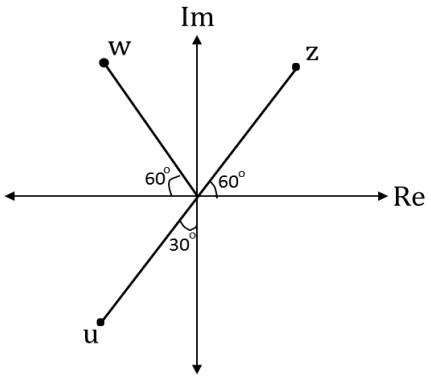
PA, PB, PC doğru parçaları çemberlere teğettir. Büyük çemberin yarıçapı 2 cm., küçük çemberin yarıçapı 1 cm. dir. Buna göre, aşağıda verilen ilişkilerden hangisi doğrudur?

A) $|PC| < |PB| = |PA|$ B) $|PC| = |PB| < |PA|$

C) $|PC| < |PB| < |PA|$ D) $|PC| = |PB| = |PA|$

E) $|PC| > |PB| = |PA|$

13) z, w, u kompleks sayılardır.



$$|z| = |w| = |u| = 2 \quad \rightarrow \quad z + w + u = ?$$

A) $-1 - i.\sqrt{3}$ B) $-1 + i\sqrt{3}$

C) $-3 - i.\sqrt{3}$ D) $-3 + i.\sqrt{3}$

E) $1 - 3.\sqrt{3}.i$

14) $r = e^{x+2} \quad \rightarrow \quad x = ?$

A) $-2 + \ln r$ B) $\ln\left(r^2 - 2\right)$ C) $-\ln\left(\frac{r}{2}\right)$

D) $-\frac{\ln r}{2}$ E) $\sqrt{r}$

15) $y = \sqrt{16 - x^2}$ eğrisi ile $y = x + 4$ doğrusu arasında kalan bölgenin alanı kaç birim karedir?

A) $4(\pi + 2)$ B) $4(\pi - 2)$ C) $4(\pi - 1)$

D) $4(\pi + 1)$ E) $4(2\pi - 1)$

16)

$$\left(\frac{2a}{b^2} - \frac{b}{4a}\right)^6$$

Üstte verilen binomiyal ifadenin açılımında baştan dördüncü terim aşağıdakilerden hangisidir?

A) $\frac{a}{5b^3}$ B) $-\frac{5a}{8b^3}$ C) $-\frac{5}{2b^3}$

D) $\frac{5}{8b^3}$ E) $-\frac{1}{64b^3}$

17)

&	a	b	c	d	e
a	b	c	d	e	a
b	c	d	e	a	b
c	d	e	a	b	c
d	e	a	b	c	d
e	a	b	c	d	e

(a & c)& X = b → X =?

A) a B) b C) c D) d E) e

18)

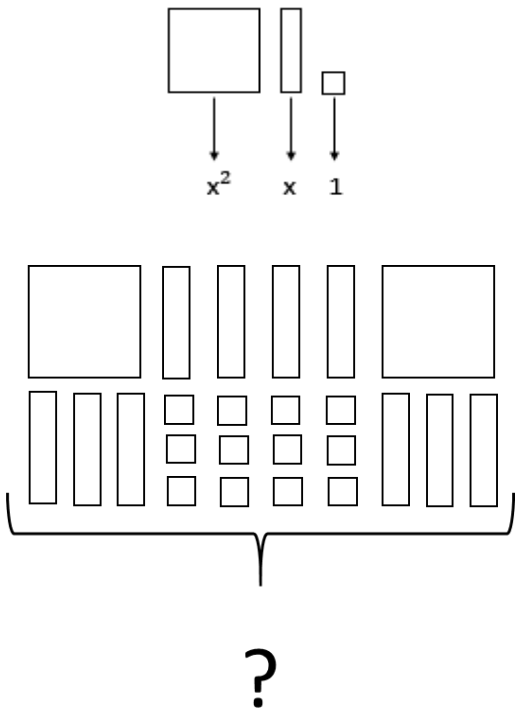
$$X = \begin{bmatrix} 1 & 2 & 3 \\ 0 & 1 & 2 \\ 0 & 0 & 1 \end{bmatrix}_{3\times3} \rightarrow X^4 = ?$$

A) $\begin{bmatrix} 1 & 8 & 81 \\ 0 & 5 & 8 \\ 0 & 0 & 1 \end{bmatrix}_{3\times3}$ B) $\begin{bmatrix} 1 & 12 & 32 \\ 0 & 10 & 12 \\ 0 & 0 & 1 \end{bmatrix}_{3\times3}$

C) $\begin{bmatrix} 1 & 10 & 15 \\ 0 & 1 & 10 \\ 0 & 0 & 1 \end{bmatrix}_{3\times3}$ D) $\begin{bmatrix} 1 & 8 & 36 \\ 0 & 1 & 8 \\ 0 & 0 & 1 \end{bmatrix}_{3\times3}$

E) $\begin{bmatrix} 1 & 20 & 30 \\ 0 & 10 & 30 \\ 0 & 0 & 20 \end{bmatrix}_{3\times3}$

19)



A) $(x+3)(2x+9)$ B) $(x+4)(2x+3)$

C) $(x+3)(2x-4)$ D) $(x+2)(2x+6)$

E) $(2x+2)(x+6)$

20)

$$z = sin\frac{5\pi}{6} - i.cos\frac{5\pi}{6} \rightarrow z^2 = ?$$

A) $-i+\sqrt{3}$ B) $\frac{1}{2}(-1+i\sqrt{3})$

C) $-\frac{1}{2}(-\sqrt{3}+i)$ D) $\frac{1}{2}(1+i\sqrt{3})$

E) $\frac{1}{4}(-1-i\sqrt{3})$

21) $a = \frac{21}{5}$, $b = \frac{7}{2}$

Bir c sayısı, reel sayı doğrusu üzerinde a ve b sayılarının arasında bulunmaktadır. c sayısı ile a sayısı arasındaki mesafe, c sayısı ile b sayısı arasındaki mesafenin 6 katıdır. Buna göre c sayısı aşağıdakilerden hangisidir?

A) $\frac{77}{20}$ B) 4 C) $\frac{96}{25}$ D) $\frac{83}{20}$ E) $\frac{18}{5}$

22)

$$\frac{\frac{5}{\frac{1}{0,05}} - \frac{0,005}{\frac{1}{5}}}{\frac{22,5}{10}} = ?$$

A) 25 B) 10 C) 100 D) 0,1 E) 0,5

23) $X = 20^3 . 40^4 . 150^5 - 1$

X sayısının sondan kaç basamağı 9 dur?

A) 13 B) 14 C) 15 D) 16 E) 17

24)

$$\frac{a}{b} = \frac{x}{y} = \frac{c}{d} = \frac{2}{3} \Rightarrow \frac{a.y.d}{b.x.c} - \frac{1}{2} = ?$$

A) -1 B) 0 C) 1 D) 2 E) -2

25)

$$A_{n\times n} = [a_{ij}] = \begin{cases} i.j & , \ i < j \\ j & , \ i = j \\ -i + j & , \ i > j \end{cases}$$

$(i, j = 1,2, \dots, n)$

Yukarıda verilen kurala göre yazılacak $A_{3\times3}$ matrisinin determinantı kaçtır?

A) 12 B) 9 C) 0 D) -9 E) -18

26)

$$\int \frac{4x}{x^2 - 1} dx = ?$$

A) $ln(x^2-1)^2$ B) $\frac{1}{2} ln(x^2-1)$ C) $ln \frac{1}{x^2-1}$
D) $ln \frac{x-1}{x+1}$ E) $2\, ln \frac{x+1}{x-1}$

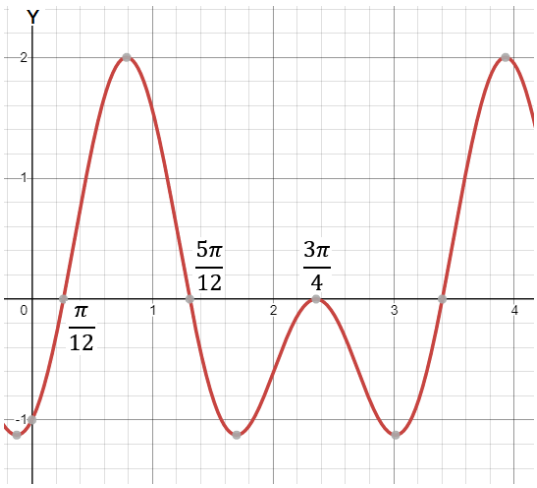
27) Aşağıdakilerden hangisi doğrudur?

A) $log_{\frac{1}{4}} 2 = \frac{1}{2}$ B) $ln\left(\frac{1}{e^3}\right) = \frac{1}{3}$

C) $log_{100} 1 = -\frac{1}{2}$ D) $log_{\sqrt{1000}} 0{,}01 = -\frac{4}{3}$

E) $log_{\sqrt{0,1}} \sqrt[3]{0{,}001} = 20$

28)



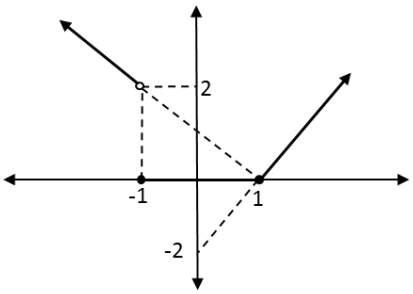
Aşağıdakilerden hangisi üstteki grafik ile anlatılan fonksiyondur?

A) $y = cos4x + sin4x$ B) $y = cos2x - sin4x$

C) $y = cos2x + sin2x$ D) $y = sin2x - 2cosx$

E) $y = sin2x - cos4x$

29)



Üstteki grafik aşağıdaki fonksiyonlardan hangisine aittir?

A) $f(x)=\begin{cases} -x+1, & x\le -2 \\ 0, & -2<x\ge 1 \\ 2x-2, & x>1 \end{cases}$

B) $f(x)=\begin{cases} -x-1, & x<-1 \\ 0, & -1<x<1 \\ 2x-2, & x>1 \end{cases}$

C) $f(x)=\begin{cases} -x+1, & x<-1 \\ 0, & -1\le x\le 1 \\ 2x-2, & x>1 \end{cases}$

D) $f(x)=\begin{cases} -x+1, & x\le -1 \\ 0, & -1<x<1 \\ 2x-2, & x\ge 1 \end{cases}$

E) $f(x)=\begin{cases} x+1, & x\le -1 \\ 0, & -1<x<1 \\ -2x+2, & x\ge 1 \end{cases}$

30)

$$x^3-3x^2-x+3\le 0$$

Üstteki eşitsizliğin $[0,4]$ aralığındaki çözüm kümesi aşağıdakilerden hangisidir?

A) $[-1,0]$ B) $[-1,1]$ C) $\{1,3\}$

D) $\{-1,1\}$ E) $[1,3]$

31)

$$\int \frac{dx}{e^x}=?$$

A) $e^{-x}+c$ B) $-e^{-x}+c$ C) $e^{x}+c$

D) $lnx+c$ E) $e^{x}.lnx+c$

32)

$$\lim_{x\to\pi}\frac{cos4x-sin\frac{x}{2}}{x-\pi}=?$$

A) $-\pi$ B) 0 C) -1 D) 1 E) ∞

33) $x = A^2 + A, \quad y = A^3 - 2A$

$$\left.\frac{d^2y}{dx^2}\right|_{A=0} = ?$$

A) -4 B) -1 C) 0 D) 4 E) 8

34)

$y = x^2 - 5x + 8$ parabolü üzerinde alınacak bir noktanın koordinatları toplamının alabileceği <u>en küçük</u> değer kaçtır?

A) -4 B) -3 C) 4 D) 2,5 E) -2

35)

$$f(x) = \begin{cases} a - x\,, & x < -3 \\ x - a^2, & -3 \le x \le 4 \\ 4 - a\,, & 4 < x \end{cases},$$

$f(-4) = f(4) - a$.

$f(x)$ fonksiyonunu hem $x = 4$ noktasında hem de $x = -3$ noktasında **süreksiz** yapan a değeri kaçtır?

A) -2 B) -1 C) 2 D) 1 E) 0

36)

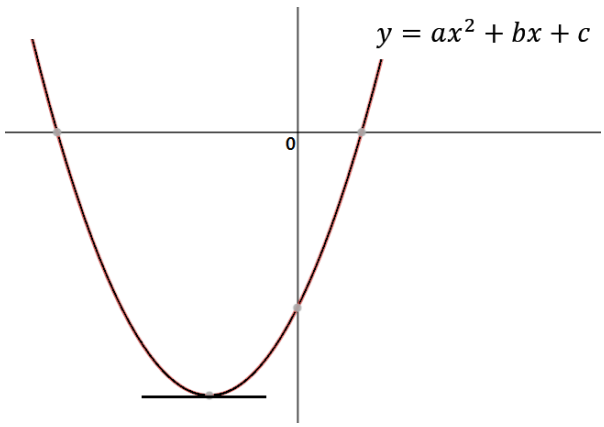
$$3a - \frac{3}{a} = a^2 + \frac{1}{a^2}$$

Üstteki eşitliği sağlayan a değerlerinin <u>en büyüğü</u> aşağıdakilerden hangisidir?

A) $1 + \sqrt{2}$ B) $\frac{1+\sqrt{5}}{2}$ C) $1 - \sqrt{2}$

D) $2 - \sqrt{5}$ E) $\frac{1-\sqrt{5}}{2}$

37)



Üstteki grafiğe göre aşağıdakilerden hangisi kesin doğrudur?

A) $\frac{a}{c-b} > 0$ B) $\frac{b}{c} > 0$ C) $a + b - c > 0$

D) $a.c > 0$ E) $a < 0$

38)

$$4+\frac{8}{5}+\frac{16}{25}+\frac{32}{125}+\cdots=?$$

A) $\frac{10}{3}$ B) $\frac{20}{7}$ C) $\frac{20}{3}$ D) $\frac{120}{7}$ E) 7

39)

$$\sum_{i=1}^{5}\left(\sum_{j=1}^{i} j\right)=?$$

A) 42 B) 35 C) 33 D) 30 E) 29

40)

$$f(x)=(3+sinx)(-1+sinx)$$

$f(x)$ fonksiyonunun alabileceği en küçük değeri kaçtır?

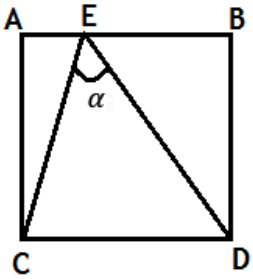
A) 0 B) -1 C) -2 D) -3 E) -4

41)

$$\frac{3-x}{x^2+x-6}=\frac{A}{x+3}-\frac{B}{x-2} \quad \rightarrow \quad A+B=?$$

A) $\frac{9}{5}$ B) $-\frac{12}{5}$ C) $-\frac{3}{5}$ D) $-\frac{7}{5}$ E) 0

42)



$m(\hat{A})=m(\hat{B})=m(\hat{C})=m(\hat{D})=90^0$

$|EB|=2.|AE|, \quad |AB|=|BD|=|CD|=|AC|$

$\tan(\alpha)=?$

A) $\frac{10}{9}$ B) $\frac{20}{7}$ C) $\frac{9}{7}$ D) $\frac{7}{12}$ E) $\frac{1}{3}$

43)

$P(x) = ax^2 - 4$,

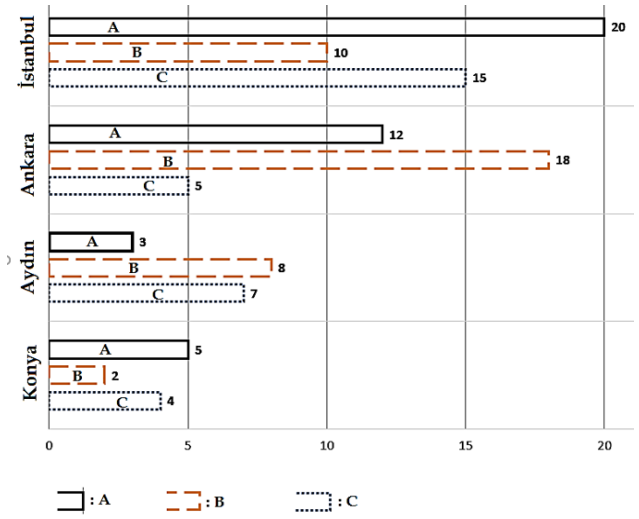
$Q(x) = 7x^2 - bx - 2$,

$\frac{d}{dx}(P(x-2)) = \frac{d}{dx}(Q(x))$

$a + b = ?$

A) 35 B) 30 C) 42 D) 40 E) -18

44. 45. 46. 47. soruyu aşağıdaki grafiğe göre cevaplayınız.



Üstteki grafik ile; ***A***, ***B*** ve ***C*** ülkelerinden İstanbul, Ankara, Aydın ve Konya illerine gelen turist sayıları arasındaki ilişkiler istatistiki olarak verilmiştir.

44) ***C*** ülkesinden İstanbul iline gelen turist sayısının, ***B*** ülkesinden İstanbul iline gelen turist sayısına oranı kaçtır?

A) $\frac{1}{2}$ B) $\frac{2}{3}$ C) $\frac{3}{2}$ D) $\frac{3}{4}$ E) $\frac{5}{4}$

45) Aydın iline gelen toplam turist sayısının İstanbul iline gelen toplam turist sayısına oranı kaçtır?

A) $\frac{7}{15}$ B) $\frac{2}{5}$ C) $\frac{15}{24}$ D) $\frac{3}{4}$ E) $\frac{5}{4}$

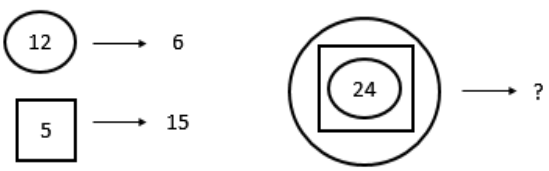
46) ***B*** ülkesinden gelen toplam turist sayısının ***A*** ülkesinden gelen toplam turist sayısına oranı aşağıdakilerden hangisine eşittir?

A) 0,72 B) 0,80 C) 0,85 D) 0,90 E) 0,95

47) C ülkesinden gelen turist sayıları incelenirse, Aydın iline gelen turist sayısı, Ankara iline gelen turist sayısından yüzde kaç fazladır?

A) %40 B) % 35 C) % 30 D) % 25 E) % 20

48)



A) 6 B) 8 C) 9 D) 12 E) 18

49) $3\times10^5+4\times10^3+6\times10^2+6=?$

A) 300 466 B) 304 606 C) 304 060

D) 30 406 060 E) 3 004 606

50)

$$100\ \boxed{\#}\ 20 \rightarrow 5$$

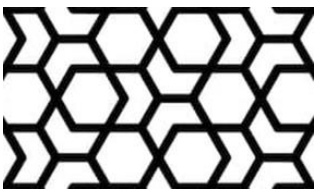
$$9\ \boxed{\%}\ 2 \rightarrow 81$$

$$5\ \boxed{*}\ 4 \rightarrow 9$$

$$\left((6\ \boxed{\%}\ 2)\ \boxed{*}\ 4\right)\ \boxed{\#}\ 2 \rightarrow ?$$

A) 40 B) 32 C) 24 D) 20 E)18

51)



Yukarıdaki figürün içerisinde aşağıdaki şekilden en çok kaç tane bulunabilir?

A) 8 B) 9 C) 10 D) 11 E) 12

52) $10^{\frac{1}{2}}\times100^{\frac{1}{3}}\times1000^{\frac{1}{4}}=?$

A) $\sqrt[12]{10^{21}}$ B) $\sqrt[6]{10^{11}}$ C) $\sqrt[12]{10^{23}}$ D) 100 E) $\sqrt[12]{10^{19}}$

53) $0{,}009\times0{,}02=?$

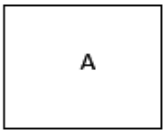
A) $1{,}8\times10^{-4}$ B) $1{,}8\times10^{-5}$ C) $1{,}8\times10^{-6}$

D) $1{,}2\times10^{-6}$ E) $1{,}5\times10^{-4}$

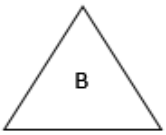
54)

A) 25 B) 23 C) 22 D) 21 E) 20

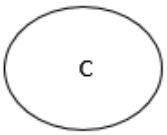
Sıradaki üç soruyu (55-56-57) aşağıda verilen kümelere göre çözünüz.



A={...,2,4,6,8,10,...}



B={...,3,6,9,12,...}

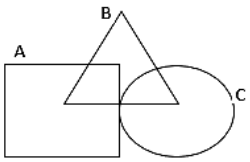


C={...,5,10,15,20,...}

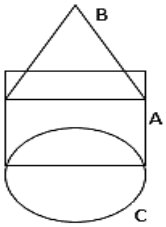
Üstte görülen A, B, C kümelerinin elemanları olan tamsayıların birkaçı bu kümelerin yanında gösterilmiştir.

55) Aşağıdakilerden hangisi doğrudur?

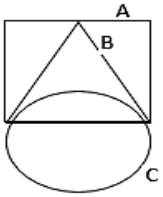
A)



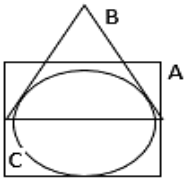
B)



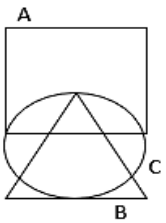
C)



D)



E)



56) 105 tamsayısı aşağıdaki kümelerden hangisine aittir?

A) $A \cap B \cap C$ B) $A \cap (B \cup C)$

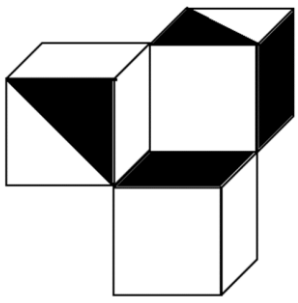
C) $C - (A \cap B)$ D) $(B - C) - A$

E) $(A - B) \cap C$

57) Aşağıdaki tamsayılardan hangisi $(A - B) - C$ kümesine aittir?

A) 64 B) 60 C) 54 D) 48 E) 45

58)

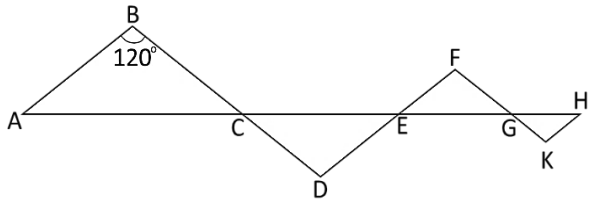


Üstteki üç küpten oluşan figürün görünür yüzeylerinin yüzde kaçı siyaha boyalıdır?

A) 22,2 B) 33,3 C) 44,4

D) 25 E) 40

59)



$|AB|//|DF|//|HK|$, $|BD|//|FK|$,

$m(\widehat{ABC}) = 120^{\circ}$, $|AC| = 12\ cm.$

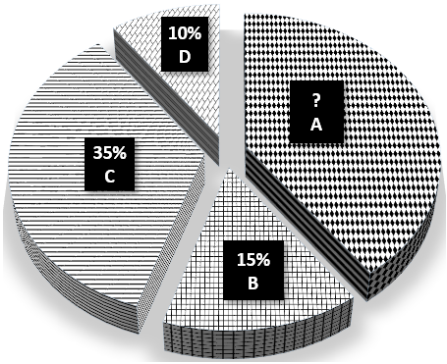
$|CE| = 9\ cm.\ |EG| = 6\ cm.\ |GT| = 3\ cm.$

Şekildeki ikizkenar üçgenlerin alanları toplamı kaç $cm.$ dir?

A) $\frac{45\sqrt{3}}{2}$ B) $\frac{15\sqrt{3}}{2}$ C) $\frac{15\sqrt{3}}{4}$

D) $\frac{45\sqrt{3}}{4}$ E) $5\sqrt{3}$

60)

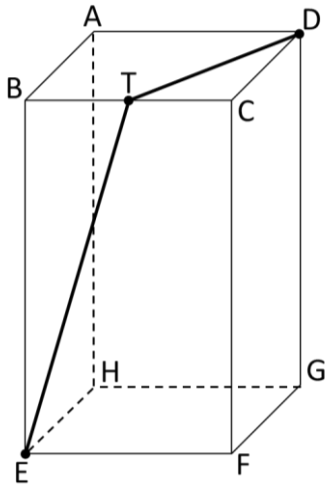


Bir şehirde bulunan 4 üniversitenin öğrenci sayılarına ait yüzdeler, daire grafiği ile temsil edilmiştir. **B** üniversitesindeki öğrencilerin sayısı 4500 olduğuna göre **A** üniversitesindeki öğrencilerin sayısı kaçtır?

A) 9 000 B) 10 000 C) 11 000

D) 12 000 E) 12 500

61)



$|BE| = 4$, $|AB| = 2$, $|BT| = |TC|$.

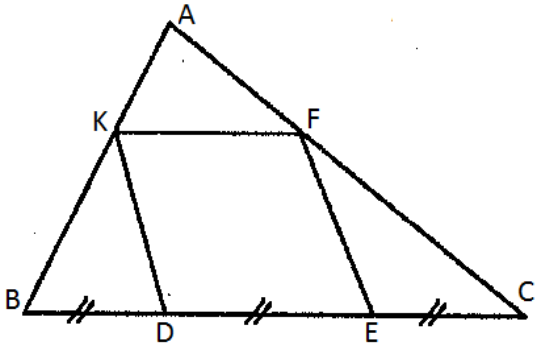
Üstteki şekil bir kare prizmadır. Verilen bilgilere göre aşağıdakilerden hangisi doğrudur?

A) $3 < |ET| + |TD| < 4$ B) $4 < |ET| + |TD| < 5$

C) $5 < |ET| + |TD| < 6$ D) $6 < |ET| + |TD| < 7$

E) $7 < |ET| + |TD| < 8$

62)



$|DE| = |EF| = |FK| = |DK|$

$|BD| = |DE| = |EC|$, $\frac{|AK|}{|KB|} = ?$

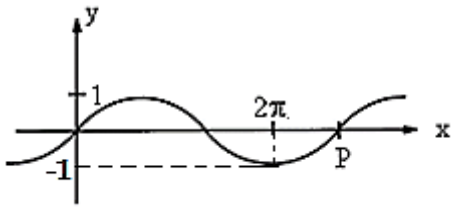
A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{2}{3}$ D) $\frac{1}{4}$ E) $\frac{1}{9}$

63) Aşağıdaki sayılardan hangisi en büyüktür?

A) $\cos\left(\frac{3\pi}{2}\right)$ B) $\cos\left(\frac{\pi}{3}\right)$ C) $\cos\left(\frac{\pi}{4}\right)$

D) $\cos\left(\frac{\pi}{6}\right)$ E) $\cos(0^\circ)$

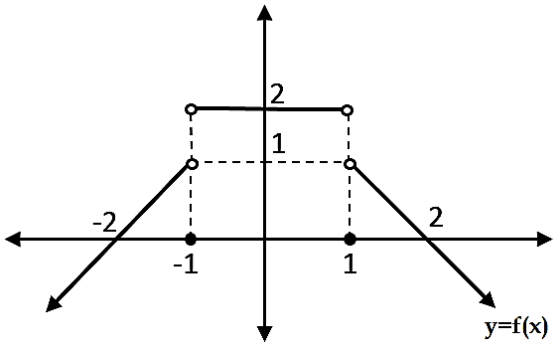
64)



Grafik $y = \sin(ax)$ fonksiyonuna aittir. **P** noktasına karşılık gelen açı aşağıdakilerden hangisidir?

A) $\frac{2\pi}{3}$ B) $\frac{5\pi}{3}$ C) $\frac{7\pi}{3}$ D) $\frac{8\pi}{3}$ E) $\frac{10\pi}{3}$

Sıradaki üç soruyu (65-66-67) aşağıdaki grafiğe göre cevaplayınız.



65)

$$f(1) + f(0) + f(-1) = ?$$

A) 1 B) 2 C) 3 D) 0 E) -2

66)

$$\frac{f\left(\frac{1}{2}\right)}{f\left(-\frac{1}{2}\right)} = ?$$

A) 0 B) 1 C) -1 D) 2 E) -2

67)

$$f(3) + f(-3) = ?$$

A) 0 B) 1 C) -1 D) 2 E) -2

68) $x.y.z.t < 0$

$x.y.z > 0$

$y.t > 0$

$x < 0$

x, y, z, t değişkenlerinin işaretleri hangi şıkta doğru verilmiştir?

	x	y	z	t
A)	−	−	−	−
B)	−	−	−	+
C)	−	−	+	−
D)	−	+	+	−
E)	+	−	−	+

69)

$345671 \rightarrow 188$

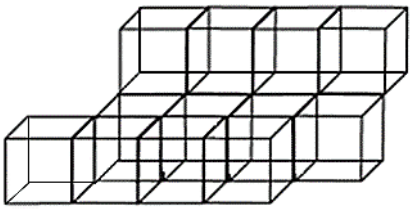
$456782 \rightarrow 2210$

$135246 \rightarrow 1110$

$211231 \rightarrow ?$

A) 331 B) 231 C) 1221 D) 83 E) 64

70)



12 eş küpün birleştirilmesiyle oluşan üç boyutlu bu yapının yüzeyleri dışarıdan boyanıyor. Bu iş sonunda bu küpler birbirinden ayrılıyor. Ayrık haldeki küplerin boyanmış yüzlerinin toplam sayısı kaçtır?

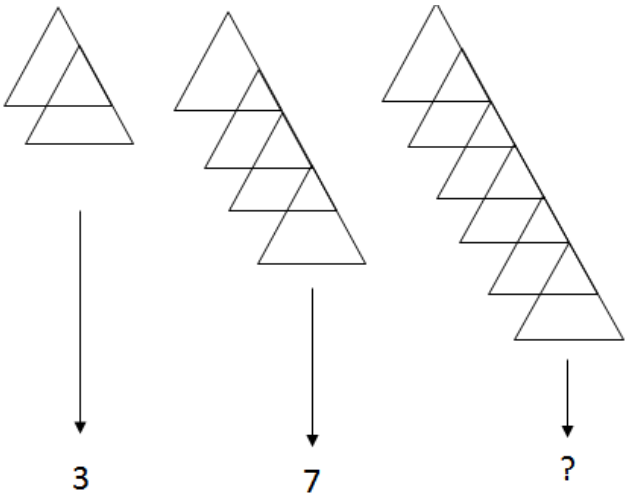
A) 44 B) 48 C) 52 D) 64 E) 88

71)

$$\begin{bmatrix}2\\5\\6\\3\\1\end{bmatrix} \rightarrow \begin{bmatrix}1\\2\\5\\6\\4\end{bmatrix} \rightarrow \begin{bmatrix}4\\1\\2\\5\\7\end{bmatrix} \rightarrow \begin{bmatrix}7\\4\\1\\2\\6\end{bmatrix} \rightarrow ?$$

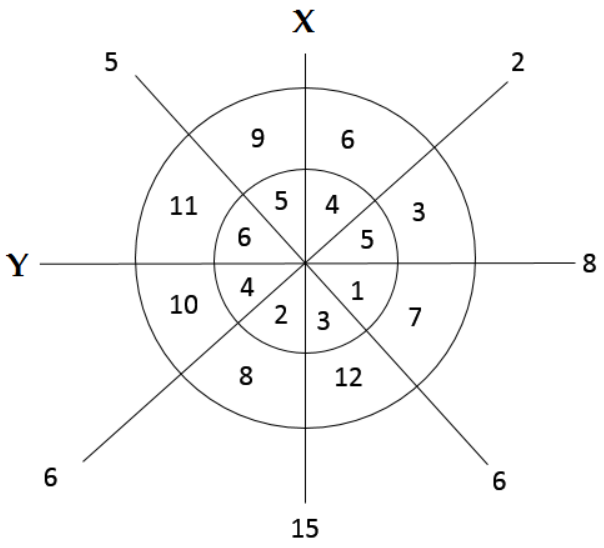
A) $\begin{bmatrix}6\\7\\5\\4\\3\end{bmatrix}$ B) $\begin{bmatrix}6\\7\\4\\1\\3\end{bmatrix}$ C) $\begin{bmatrix}6\\7\\4\\1\\6\end{bmatrix}$ D) $\begin{bmatrix}5\\3\\2\\1\\0\end{bmatrix}$ E) $\begin{bmatrix}5\\6\\1\\2\\3\end{bmatrix}$

72)



A) 10 B) 11 C) 13 D) 15 E) 21

73)



X+Y=?

A) 10 B) 15 C) 18 D) 25 E) 28

74) $|a-3|=|b+1|=2$

Koordinat sistemindeki (a,b) noktalarının apsis ve ordinatları arasında üstteki ilişki vardır. Bu (a,b) noktalarından orijine **en yakın** olanının orijine uzaklığı kaçtır?

A) 1 B) $\sqrt{2}$ C) $\sqrt{3}$ D) $\sqrt{10}$ E) $\sqrt{26}$

75) $\dfrac{\sqrt{128}}{\sqrt[3]{128}} = a.\sqrt[6]{a} \quad \rightarrow \quad a = ?$

A) 1 B) 2 C) 4 D) 8 E) 16

76)

1	2	3	5	8	13	21	x	y	89

Yukarıda verilen sayı dizisinde x ve y yerine hangi sayı gelmelidir?

A) $x = 28$, $y = 39$ B) $x = 31$, $y = 48$ C) $x = 34$, $y = 55$

D) $x = 34$, $y = 59$ E) $x = 36$, $y = 62$

77)

$$\int_a^3 \frac{1}{\sqrt{4-x}}dx = 8 \quad \rightarrow \quad a = ?$$

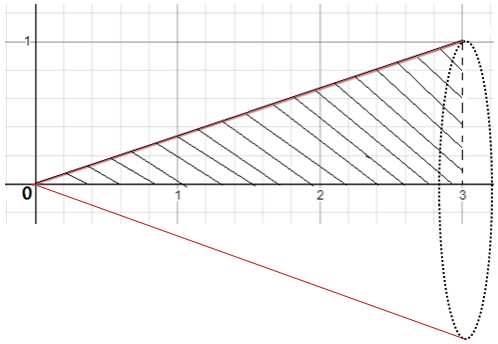
A) -21 B) -20 C) -18 D) -12 E) 1

78) $F(x,y) = -x + y + 1 - e^{xy} = 0$

$\Rightarrow F'(0,0) = ?$

A) $-\frac{3}{4}$ B) $\frac{5}{3}$ C) 0 D) -1 E) 1

79)



$f(x)=\frac{x}{3}$, $x=0$, $x=3$ doğruları ve x ekseni arasında kalan alan x ekseni etrafında 180^0 döndürülüyor. Bu sayede oluşacak cismin hacmi kaç cm^3 tür?

A) $\frac{\pi}{3}$ B) $\frac{\pi}{2}$ C) $\frac{3\pi}{2}$ D) 2π E) π

80)

$f=\{(x,y):\ x+3y=3\ ;\ x,y\in\ \mathbb{R}\ \}$

$g=\{(x,y):\ 3x+y=3\ ;\ \ x,y\in\ \mathbb{R}\ \}$

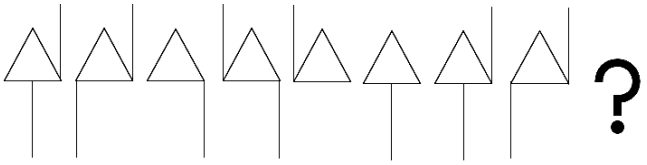
Üstte verilen f ve g bağıntılarına göre aşağıdakilerden hangisi doğrudur?

$A)\ (f+g)(3)=-1$ $B)\ (f+g)\left(\frac{3}{4}\right)=1$

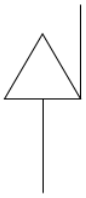
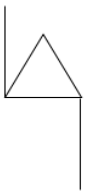
$C)\ (f+g)\left(\frac{3}{4}\right)=\frac{3}{2}$ $D)\ (f+g)\left(\frac{3}{4}\right)=\frac{9}{16}$

$E)\ (f+g)(1)=\frac{3}{4}$

1)



The sequence of figures above is periodic. Which of the following should come to the end of this sequence?

A)  B)  C) 

D)  E) 

2)

$$\frac{1}{4}+\frac{2}{5}+\frac{3}{4}+\frac{4}{5}+\frac{5}{4}+\frac{6}{5}+\ldots+\frac{19}{4}+4=?$$

A) 44 B) 45 C) 46 D) 47 E) 48

3) $y \neq 0$, $x \neq 0$,

$$\left(\frac{\frac{y}{x}-\frac{x}{y}}{\frac{1}{x}-\frac{1}{y}}\right).\left(\frac{x}{y-x}+\frac{y}{y+x}\right)=?$$

What is the simplest form of the expression given above?

A) $\frac{x+y}{y-x}$ B) $\frac{x-y}{x+y}$ C) $\frac{x^2+y^2}{x.y}$

D) $\frac{x^2-y^2}{x.y}$ E) $\frac{x^2+y^2}{y-x}$

4)

$$\left.\begin{array}{l} x=1,\overline{2} \\ y=2,\overline{4} \\ z=4,\overline{8} \end{array}\right\} \rightarrow \frac{x+y}{z}=?$$

A) $\frac{3}{4}$ B) $\frac{30}{44}$ C) $\frac{13}{24}$ D) $\frac{33}{24}$ E) $\frac{1}{2}$

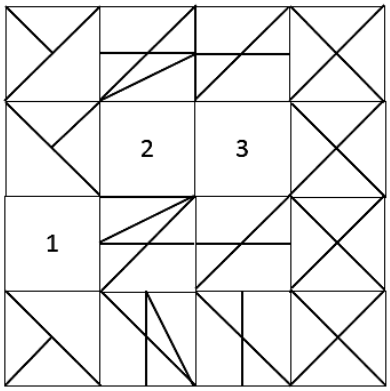
5) $\left(3^2+1\right)\left(3^4+1\right)\left(3^8+1\right)=X$

According to above equation which of the following equal to 9^8 ?

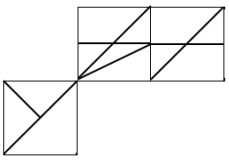
A) $8X$ B) $8X-1$ C) $8X+1$

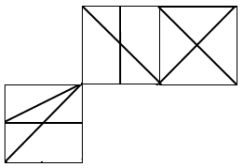
D) $8X+8$ E) $16X$

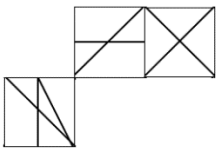
6)

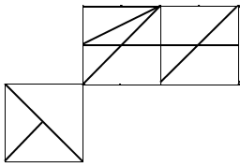


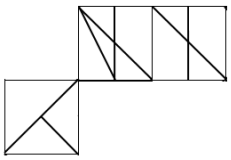
Which of the following desings will come to the places numbered 1, 2, 3 in the above figure?

A) 

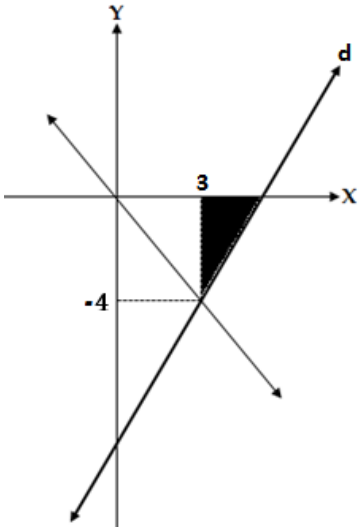
B) 

C) 

D) 

E) 

7)

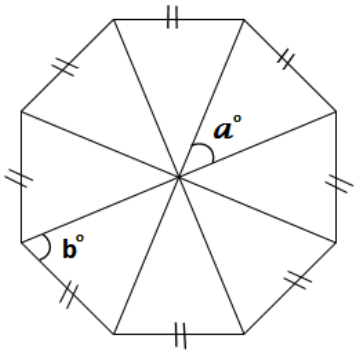


The area of the painted region is $3cm^2$. According to the above graph, which of the following is the equation of the line d ?

A) $y=\frac{3x-4}{12}$ B) $y=\frac{4x-3}{16}$ C) $y=\frac{8x-36}{3}$

D) $y=\frac{4x-18}{3}$ E) $y=\frac{3x-18}{8}$

8)

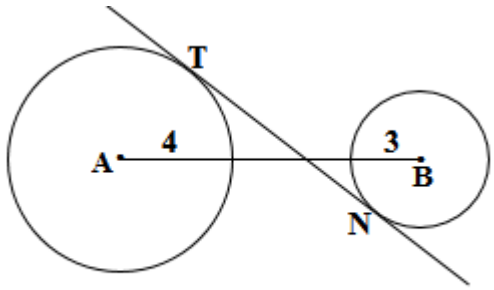


$$a^\circ + b^\circ = ?$$

A) $105{,}5^\circ$ B) $107{,}5^\circ$ C) 109°

D) $112{,}5^\circ$ E) 111°

9)



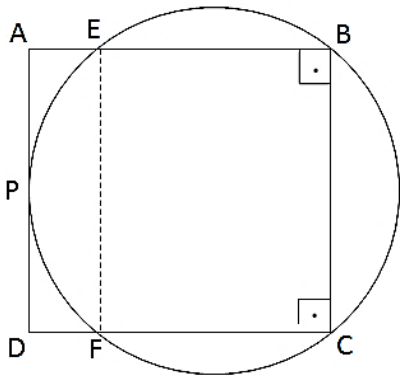
$|AB| = 14\ cm \rightarrow |TN| = ?$

The radius of the big circle is 4cm and the radius of the little circle is 3 cm. $[TN]$ is tangent to the circles. $|TN| = ?$

A) $7\sqrt{3}$ B) $7\sqrt{2}$ C) $7\sqrt{5}$

D) $14\sqrt{2}$ E) $14\sqrt{5}$

10)



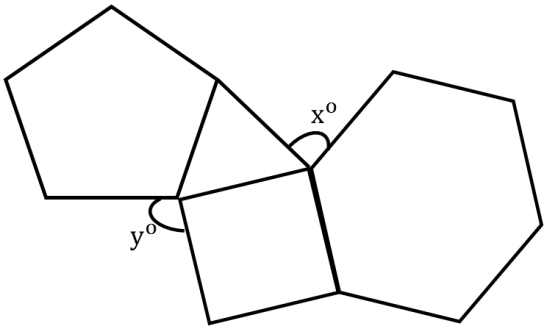
$|AP| = |PD| = 6\ cm$

$|AB| = |BC| = |CD| = |DA|$

How many cm^2 is the area of the **EFCB** rectangle?

A) 96 B) 108 C) 112 D) 120 E) 156

11)

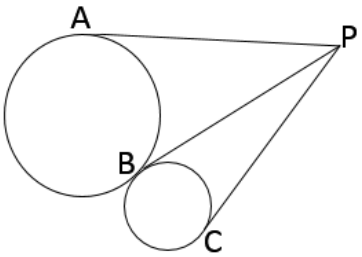


All the edges of the polygons (including triangle) given in the figure above are equal to each other. So,

$y - x = ?$

A) 22 B) 18 C) 16 D) 14 E) 12

12)



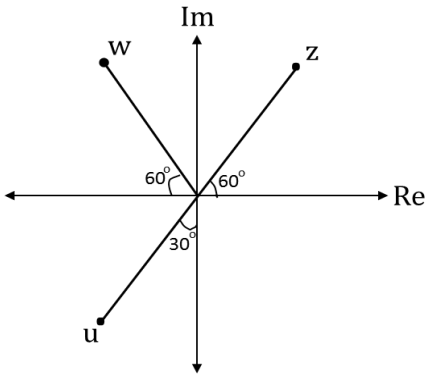
The line segments PA, PB, PC are tangent to the circles. The radius of the large circle is 2 cm.and the radius of the small circle is 1 cm. Accordingly, which of the following relationships is true?

A) $|PC| < |PB| = |PA|$ B) $|PC| = |PB| < |PA|$

C) $|PC| < |PB| < |PA|$ D) $|PC| = |PB| = |PA|$

E) $|PC| > |PB| = |PA|$

13) z, w, u are complex numbers.



$$|z| = |w| = |u| = 2 \quad \rightarrow \quad z + w + u = ?$$

A) $-1 - i.\sqrt{3}$ B) $-1 + i\sqrt{3}$

C) $-3 - i.\sqrt{3}$ D) $-3 + i.\sqrt{3}$

E) $1 - 3.\sqrt{3}.i$

14) $r = e^{x+2} \quad \rightarrow \quad x = ?$

A) $-2 + \ln r$ B) $\ln\left(r^2 - 2\right)$ C) $-\ln\left(\frac{r}{2}\right)$

D) $-\frac{\ln r}{2}$ E) $\sqrt{r}$

15)

Which of the following is equal to the area of the region between the line $y = x + 4$ and the curve $y = \sqrt{16 - x^2}$?

A) $4(\pi + 2)$ B) $4(\pi - 2)$ C) $4(\pi - 1)$

D) $4(\pi + 1)$ E) $4(2\pi - 1)$

16)

$$\left(\frac{2a}{b^2} - \frac{b}{4a}\right)^6$$

What is the fourth term in the expansion of the binomial expression given above?

A) $\frac{a}{5b^3}$ B) $-\frac{5a}{8b^3}$ C) $-\frac{5}{2b^3}$

D) $\frac{5}{8b^3}$ E) $-\frac{1}{64b^3}$

17)

&	a	b	c	d	e
a	b	c	d	e	a
b	c	d	e	a	b
c	d	e	a	b	c
d	e	a	b	c	d
e	a	b	c	d	e

$(a \,\&\, c) \,\&\, X = b \rightarrow X = ?$

A) a B) b C) c D) d E) e

18)

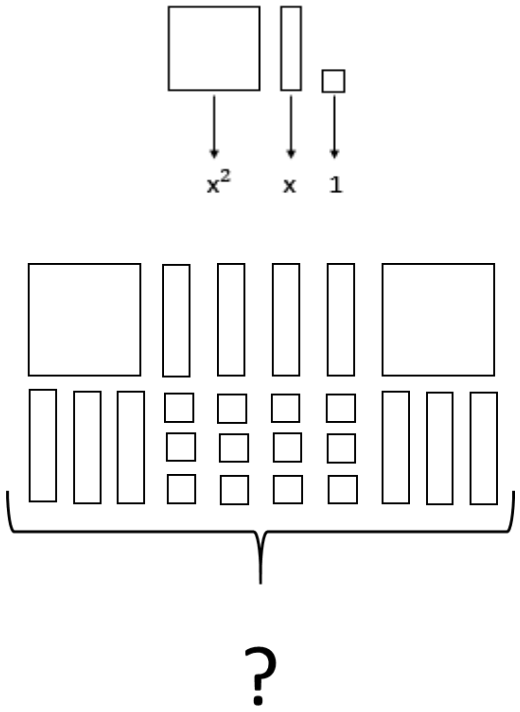
$$X = \begin{bmatrix} 1 & 2 & 3 \\ 0 & 1 & 2 \\ 0 & 0 & 1 \end{bmatrix}_{3\times3} \rightarrow X^4 = ?$$

A) $\begin{bmatrix} 1 & 8 & 81 \\ 0 & 5 & 8 \\ 0 & 0 & 1 \end{bmatrix}_{3\times3}$ B) $\begin{bmatrix} 1 & 12 & 32 \\ 0 & 10 & 12 \\ 0 & 0 & 1 \end{bmatrix}_{3\times3}$

C) $\begin{bmatrix} 1 & 10 & 15 \\ 0 & 1 & 10 \\ 0 & 0 & 1 \end{bmatrix}_{3\times3}$ D) $\begin{bmatrix} 1 & 8 & 36 \\ 0 & 1 & 8 \\ 0 & 0 & 1 \end{bmatrix}_{3\times3}$

E) $\begin{bmatrix} 1 & 20 & 30 \\ 0 & 10 & 30 \\ 0 & 0 & 20 \end{bmatrix}_{3\times3}$

19)



A) $(x+3)(2x+9)$ B) $(x+4)(2x+3)$

C) $(x+3)(2x-4)$ D) $(x+2)(2x+6)$

E) $(2x+2)(x+6)$

20)

$$z = sin\frac{5\pi}{6} - i.cos\frac{5\pi}{6} \rightarrow z^2 = ?$$

A) $-i+\sqrt{3}$ B) $\frac{1}{2}\left(-1+i\sqrt{3}\right)$

C) $-\frac{1}{2}\left(-\sqrt{3}+i\right)$ D) $\frac{1}{2}\left(1+i\sqrt{3}\right)$

E) $\frac{1}{4}\left(-1-i\sqrt{3}\right)$

21) $a = \frac{21}{5}$, $b = \frac{7}{2}$

A number c is located between the numbers a and b on the real number line. The distance between number c and number a is 6 times the distance between number c and number b. Accordingly, whic of the following is the number c?

A) $\frac{77}{20}$ B) 4 C) $\frac{96}{25}$ D) $\frac{83}{20}$ E) $\frac{18}{5}$

22)

$$\frac{\frac{5}{\frac{1}{0,05}} - \frac{0,005}{\frac{1}{5}}}{\frac{22,5}{10}} = ?$$

A) 25 B) 10 C) 100 D) 0,1 E) 0,5

23) $X = 20^3 . 40^4 . 150^5 - 1$

How many digits from the end of X have the number 9?

A) 13 B) 14 C) 15 D) 16 E) 17

24)

$$\frac{a}{b} = \frac{x}{y} = \frac{c}{d} = \frac{2}{3} \Rightarrow \frac{a.y.d}{b.x.c} - \frac{1}{2} = ?$$

A) -1 B) 0 C) 1 D) 2 E) -2

25)

$$A_{n\times n} = [a_{ij}] = \begin{cases} i.j & , \ i < j \\ j & , \ i = j \\ -i + j & , \ i > j \end{cases}$$

$(i, j = 1,2, \dots, n)$

What is the determinant of matrix $A_{3\times3}$ to be written according to the rule given above?

A) 12 B) 9 C) 0 D) -9 E) -18

26)

$$\int \frac{4x}{x^2 - 1} dx = ?$$

A) $ln(x^2 - 1)^2$ B) $\frac{1}{2} ln(x^2 - 1)$ C) $ln \frac{1}{x^2 - 1}$
D) $ln \frac{x-1}{x+1}$ E) $2\, ln \frac{x+1}{x-1}$

27)

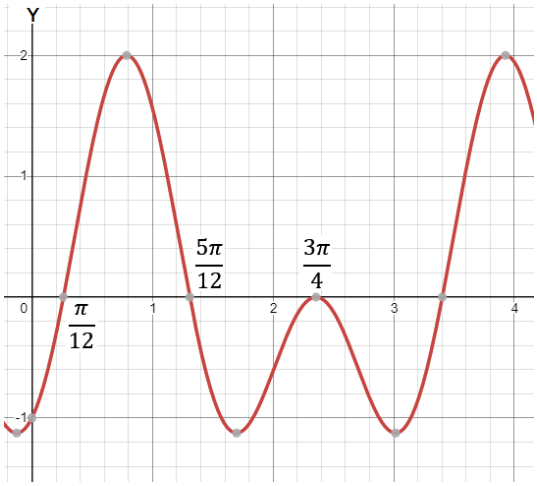
Which of the following is true?

A) $log_{\frac{1}{4}} 2 = \frac{1}{2}$ B) $ln\left(\frac{1}{e^3}\right) = \frac{1}{3}$

C) $log_{100} 1 = -\frac{1}{2}$ D) $log_{\sqrt{1000}} 0{,}01 = -\frac{4}{3}$

E) $log_{\sqrt{0{,}1}} \sqrt[3]{0{,}001} = 20$

28)



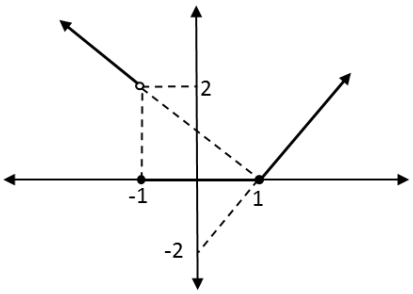
Which of the following is the function described by the graph above?

A) $y = cos4x + sin4x$ B) $y = cos2x - sin4x$

C) $y = cos2x + sin2x$ D) $y = sin2x - 2cosx$

E) $y = sin2x - cos4x$

29)



Which of the folowing function belongs to the graph given above?

A) $f(x)=\begin{cases} -x+1, & x\le -2 \\ 0, & -2<x\ge 1 \\ 2x-2, & x>1 \end{cases}$

B) $f(x)=\begin{cases} -x-1, & x<-1 \\ 0, & -1<x<1 \\ 2x-2, & x>1 \end{cases}$

C) $f(x)=\begin{cases} -x+1, & x<-1 \\ 0, & -1\le x\le 1 \\ 2x-2, & x>1 \end{cases}$

D) $f(x)=\begin{cases} -x+1, & x\le -1 \\ 0, & -1<x<1 \\ 2x-2, & x\ge 1 \end{cases}$

E) $f(x)=\begin{cases} x+1, & x\le -1 \\ 0, & -1<x<1 \\ -2x+2, & x\ge 1 \end{cases}$

30)

$$x^3-3x^2-x+3\le 0$$

Which of the following is the set of solutions in the interval [0,4] of the above inequality?

A) $[-1,0]$ B) $[-1,1]$ C) $\{1,3\}$

D) $\{-1,1\}$ E) $[1,3]$

31)

$$\int \frac{dx}{e^x}=?$$

A) $e^{-x}+c$ B) $-e^{-x}+c$ C) e^x+c

D) $lnx+c$ E) $e^x.lnx+c$

32)

$$\lim_{x\to\pi}\frac{cos4x-sin\frac{x}{2}}{x-\pi}=?$$

A) $-\pi$ B) 0 C) -1 D) 1 E) ∞

33) $x = A^2 + A, \quad y = A^3 - 2A$

$$\left.\frac{d^2y}{dx^2}\right|_{A=0} = ?$$

A) -4 B) -1 C) 0 D) 4 E) 8

34) What is the minimum value that the sum of the coordinates of a point on the parabola of

$y = x^2 - 5x + 8$?

A) -4 B) -3 C) 4 D) 2,5 E) -2

35)

$$f(x) = \begin{cases} a - x\,, & x < -3 \\ x - a^2, & -3 \le x \le 4 \\ 4 - a\,, & 4 < x \end{cases},$$

$f(-4) = f(4) - a$.

W hat is the value of a which makes the $f(x)$ function **discontinuous** at both the point $x = 4$ and the point $x = -3$?

A) -2 B) -1 C) 2 D) 1 E) 0

36)

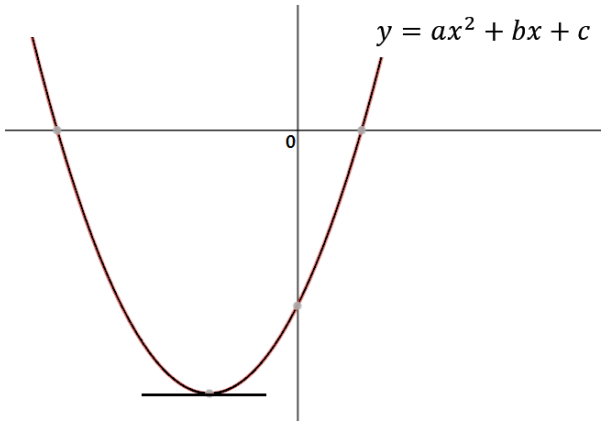
$$3a - \frac{3}{a} = a^2 + \frac{1}{a^2}$$

What is the maximum value of a that provide the above equation?

A) $1 + \sqrt{2}$ B) $\frac{1+\sqrt{5}}{2}$ C) $1 - \sqrt{2}$

D) $2 - \sqrt{5}$ E) $\frac{1-\sqrt{5}}{2}$

37)



Which of the following is <u>absolutely</u> true?

A) $\frac{a}{c-b} > 0$ B) $\frac{b}{c} > 0$ C) $a + b - c > 0$

D) $a.c > 0$ E) $a < 0$

38)

$$4+\frac{8}{5}+\frac{16}{25}+\frac{32}{125}+\cdots=?$$

A) $\frac{10}{3}$ B) $\frac{20}{7}$ C) $\frac{20}{3}$ D) $\frac{120}{7}$ E) 7

39)

$$\sum_{i=1}^{5}\left(\sum_{j=1}^{i} j\right)=?$$

A) 42 B) 35 C) 33 D) 30 E) 29

40)

$$f(x)=(3+sinx)(-1+sinx)$$

What is the minimum value of $f(x)$ function?

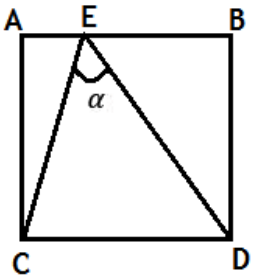
A) 0 B) -1 C) -2 D) -3 E) -4

41)

$$\frac{3-x}{x^2+x-6}=\frac{A}{x+3}-\frac{B}{x-2} \quad \rightarrow \quad A+B=?$$

A) $\frac{9}{5}$ B) $-\frac{12}{5}$ C) $-\frac{3}{5}$ D) $-\frac{7}{5}$ E) 0

42)



$m(\hat{A})=m(\hat{B})=m(\hat{C})=m(\hat{D})=90^0$

$|EB|=2.|AE|, \quad |AB|=|BD|=|CD|=|AC|$

$\tan(\alpha)=?$

A) $\frac{10}{9}$ B) $\frac{20}{7}$ C) $\frac{9}{7}$ D) $\frac{7}{12}$ E) $\frac{1}{3}$

43)

$P(x)=ax^2-4$,

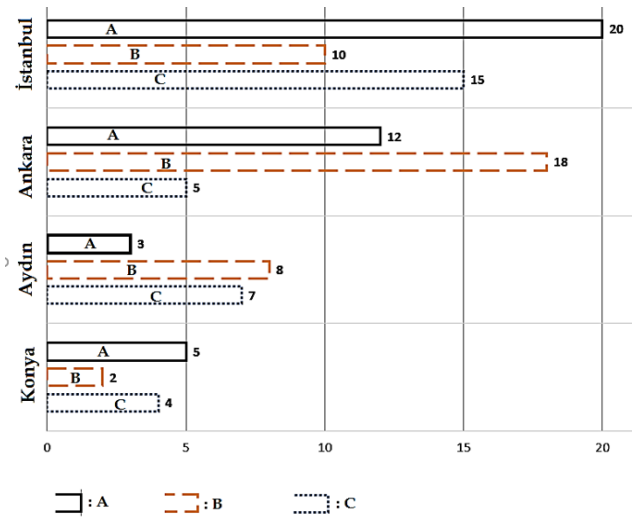
$Q(x)=7x^2-bx-2$,

$\frac{d}{dx}(P(x-2))=\frac{d}{dx}(Q(x))$

$a+b=?$

A) 35 B) 30 C) 42 D) 40 E) -18

Answer the 44. 45. 46. 47. questions according to the graph below.



With the graphic above, the relations between the number of tourists coming from countries A, B, C to Istanbul, Ankara, Aydın and Konya are given statistically.

44)

What is the ratio of the number of tourists coming from country ***C*** to the number of tourists coming from country ***B*** to the city Istanbul?

A) $\frac{1}{2}$ B) $\frac{2}{3}$ C) $\frac{3}{2}$ D) $\frac{3}{4}$ E) $\frac{5}{4}$

45)

What is the ratio of the total number of tourists visiting the city Aydın to the total number of tourists visiting the city Istanbul?

A) $\frac{7}{15}$ B) $\frac{2}{5}$ C) $\frac{15}{24}$ D) $\frac{3}{4}$ E) $\frac{5}{4}$

46)

What is the ratio of the total numbers of tourists coming from the country *B* to the total numbers of tourists coming from the country *A*?

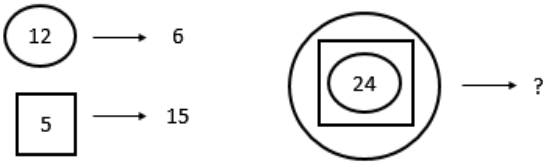
A) 0,72 B) 0,80 C) 0,85 D) 0,90 E) 0,95

47)

If the number of tourists coming from country C is examined, how many percent of the tourists coming to Aydın is more than the number of tourists coming to Ankara?

A) %40 B) % 35 C) % 30 D) % 25 E) % 20

48)



A) 6 B) 8 C) 9 D) 12 E) 18

49) $3\times10^5+4\times10^3+6\times10^2+6=?$

A) 300 466 B) 304 606 C) 304 060

D) 30 406 060 E) 3 004 606

50)

$$100\ \boxed{\#}\ 20 \rightarrow 5$$

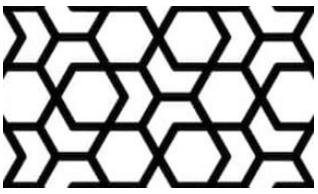
$$9\ \boxed{\%}\ 2 \rightarrow 81$$

$$5\ \boxed{*}\ 4 \rightarrow 9$$

$$\left((6\ \boxed{\%}\ 2)\ \boxed{*}\ 4\right)\ \boxed{\#}\ 2 \rightarrow ?$$

A) 40 B) 32 C) 24 D) 20 E)18

51)



How many of the following image can be found in the figure above?

A) 8 B) 9 C) 10 D) 11 E) 12

52) $10^{\frac{1}{2}}\times100^{\frac{1}{3}}\times1000^{\frac{1}{4}}=?$

A) $\sqrt[12]{10^{21}}$ B) $\sqrt[6]{10^{11}}$ C) $\sqrt[12]{10^{23}}$ D) 100 E) $\sqrt[12]{10^{19}}$

53) $0{,}009\times0{,}02=?$

A) $1{,}8\times10^{-4}$ B) $1{,}8\times10^{-5}$ C) $1{,}8\times10^{-6}$

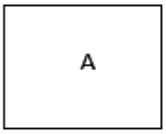
D) $1{,}2\times10^{-6}$ E) $1{,}5\times10^{-4}$

54)

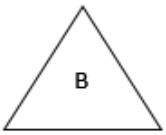
A) 25 B) 23 C) 22 D) 21 E) 20

,

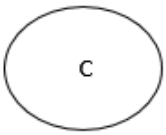
Solve the subsequent three questions which are 55-56-57 according to the below sets A,B,C.



A={...,2,4,6,8,10,...}



B={...,3,6,9,12,...}

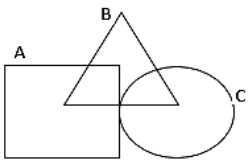


C={...,5,10,15,20,...}

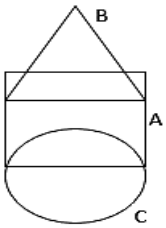
Some of the integers that are the elements of introduced sets A, B, C are shown together with these sets.

55) Which of the following is correct?

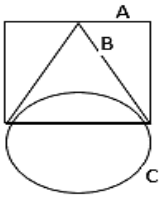
A)



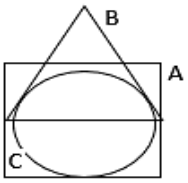
B)



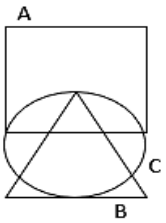
C)



D)



E)



56) The integer 105 belongs to which of the following sets?

A) $A \cap B \cap C$ B) $A \cap (B \cup C)$

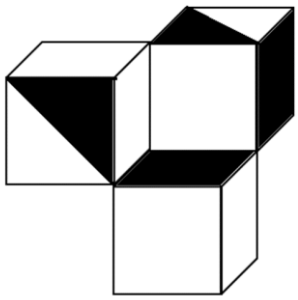
C) $C - (A \cap B)$ D) $(B - C) - A$

E) $(A - B) \cap C$

57) Which of the following integers is belongs to the set $(A - B) - C$?

A) 64 B) 60 C) 54 D) 48 E) 45

58)

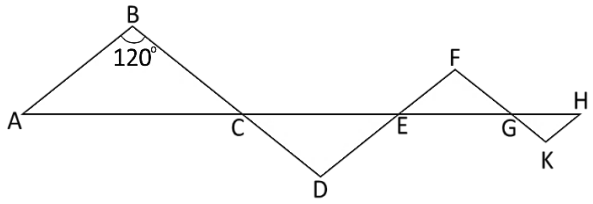


What percentage of the visible surfaces of the upper figure, which consists of three cubes, painted in black?

A) 22,2 B) 33,3 C) 44,4

D) 25 E) 40

59)



$|AB|//|DF|//|HK|$, $|BD|//|FK|$,

$m(\widehat{ABC}) = 120^{\circ}$, $|AC| = 12\ cm.$

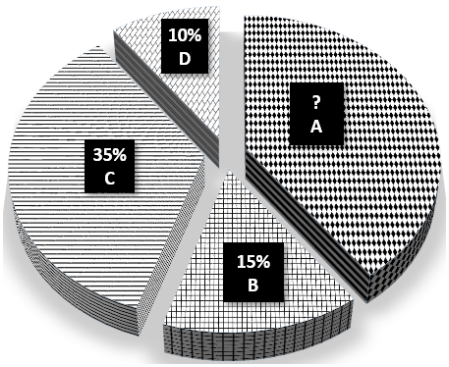
$|CE| = 9\ cm.\ |EG| = 6\ cm.\ |GT| = 3\ cm.$

How many cm are the total area of the triangles in the above figure?

A) $\frac{45\sqrt{3}}{2}$ B) $\frac{15\sqrt{3}}{2}$ C) $\frac{15\sqrt{3}}{4}$

D) $\frac{45\sqrt{3}}{4}$ E) $5\sqrt{3}$

60)

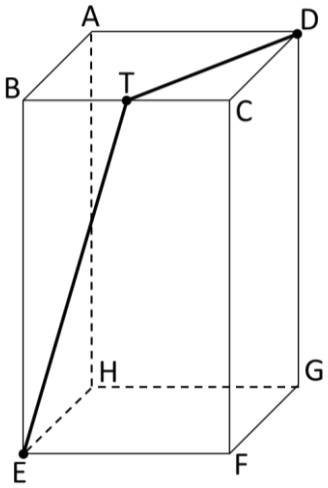


The percentages of the number of students at four universities in a city are represented by above circle graph. If the number of students at university **B** is 4500, what is the number of students at university **A**?

A) 9 000 B) 10 000 C) 11 000

D) 12 000 E) 12 500

61)



$|BE| = 4$, $|AB| = 2$, $|BT| = |TC|$.

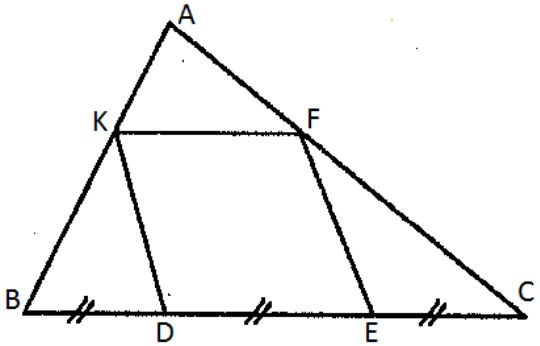
Above shape is a square prism. Which of the following is true according to the given information?

A) $3 < |ET| + |TD| < 4$ B) $4 < |ET| + |TD| < 5$

C) $5 < |ET| + |TD| < 6$ D) $6 < |ET| + |TD| < 7$

E) $7 < |ET| + |TD| < 8$

62)



$|DE| = |EF| = |FK| = |DK|$

$|BD| = |DE| = |EC|$, $\frac{|AK|}{|KB|} = ?$

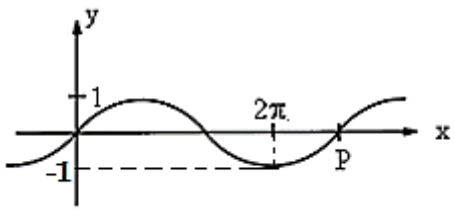
A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{2}{3}$ D) $\frac{1}{4}$ E) $\frac{1}{9}$

63) Of the following numbers, which is largest?

A) $\cos\left(\frac{3\pi}{2}\right)$ B) $\cos\left(\frac{\pi}{3}\right)$ C) $\cos\left(\frac{\pi}{4}\right)$

D) $\cos\left(\frac{\pi}{6}\right)$ E) $\cos(0^\circ)$

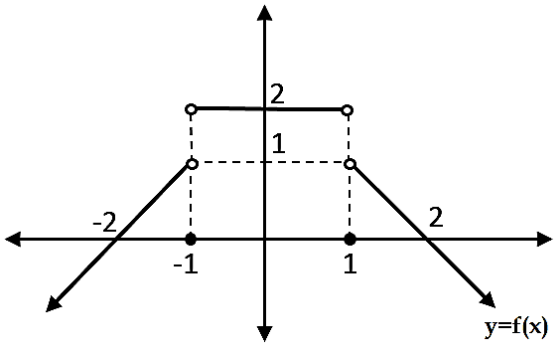
64)



The above graph belongs to the function of $y = \sin(ax)$. So, which of the following is the angle corresponding to point **P** ?

A) $\frac{2\pi}{3}$ B) $\frac{5\pi}{3}$ C) $\frac{7\pi}{3}$ D) $\frac{8\pi}{3}$ E) $\frac{10\pi}{3}$

Answer the following three questions(65-66-67) according to the graph below.



65)

$$f(1) + f(0) + f(-1) = ?$$

A) 1 B) 2 C) 3 D) 0 E) -2

66)

$$\frac{f\left(\frac{1}{2}\right)}{f\left(-\frac{1}{2}\right)} = ?$$

A) 0 B) 1 C) -1 D) 2 E) -2

67)

$$f(3) + f(-3) = ?$$

A) 0 B) 1 C) -1 D) 2 E) -2

68) $x.y.z.t < 0$

$x.y.z > 0$

$y.t > 0$

$x < 0$

Which of the following is correct with respect to the signs of the variables x, y, z, t ?

	x	y	z	t
A)	−	−	−	−
B)	−	−	−	+
C)	−	−	+	−
D)	−	+	+	−
E)	+	−	−	+

69)

$345671 \rightarrow 188$

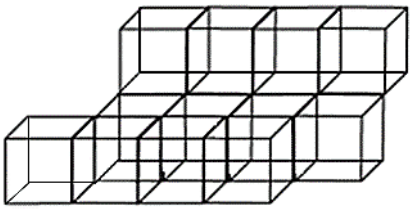
$456782 \rightarrow 2210$

$135246 \rightarrow 1110$

$211231 \rightarrow ?$

A) 331 B) 231 C) 1221 D) 83 E) 64

70)



The surfaces of a three-dimensional above structure formed by combining 12 cubes are painted from the outside. At the end of this process, these cubes are separated from each other. What is the total number of painted faces of discrete cubes?

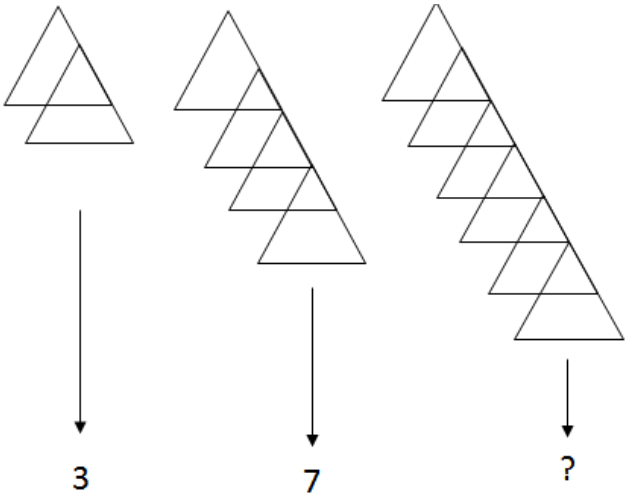
A) 44 B) 48 C) 52 D) 64 E) 88

71)

$$\begin{bmatrix}2\\5\\6\\3\\1\end{bmatrix} \rightarrow \begin{bmatrix}1\\2\\5\\6\\4\end{bmatrix} \rightarrow \begin{bmatrix}4\\1\\2\\5\\7\end{bmatrix} \rightarrow \begin{bmatrix}7\\4\\1\\2\\6\end{bmatrix} \rightarrow ?$$

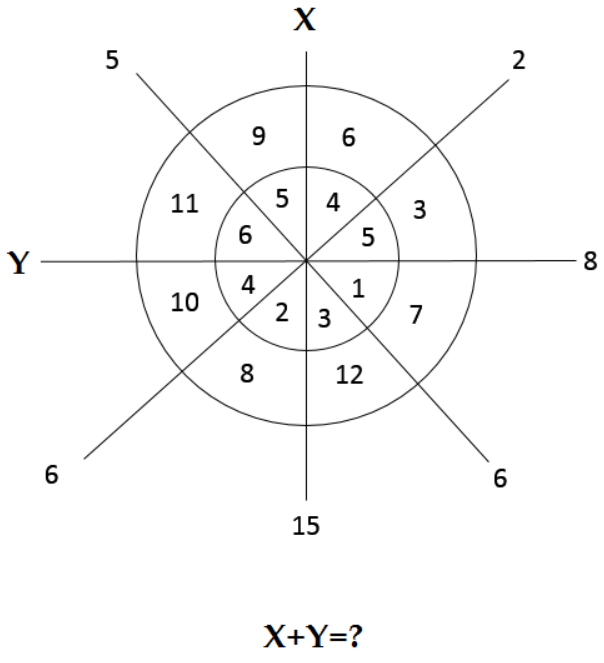
A) $\begin{bmatrix}6\\7\\5\\4\\3\end{bmatrix}$ B) $\begin{bmatrix}6\\7\\4\\1\\3\end{bmatrix}$ C) $\begin{bmatrix}6\\7\\4\\1\\6\end{bmatrix}$ D) $\begin{bmatrix}5\\3\\2\\1\\0\end{bmatrix}$ E) $\begin{bmatrix}5\\6\\1\\2\\3\end{bmatrix}$

72)



A) 10 B) 11 C) 13 D) 15 E) 21

73)



X+Y=?

A) 10 B) 15 C) 18 D) 25 E) 28

74) $|a-3|=|b+1|=2$

There is above relationship between the abscissa and the ordinate of points (a,b) in the coordinate system. So, what is the distance of the origin to the point (a,b) which of **closest** one to the origin?

A) 1 B) $\sqrt{2}$ C) $\sqrt{3}$ D) $\sqrt{10}$ E) $\sqrt{26}$

75) $\dfrac{\sqrt{128}}{\sqrt[3]{128}} = a.\sqrt[6]{a} \rightarrow a = ?$

A) 1 B) 2 C) 4 D) 8 E) 16

76)

1	2	3	5	8	13	21	***x***	***y***	89

Which of the following should be replaced by x and y in the number sequence given above?

A) $x=28$, $y=39$ B) $x=31$, $y=48$ C) $x=34$, $y=55$

D) $x=34$, $y=59$ E) $x=36$, $y=62$

77)

$$\int_a^3 \frac{1}{\sqrt{4-x}}dx = 8 \quad \rightarrow \quad a = ?$$

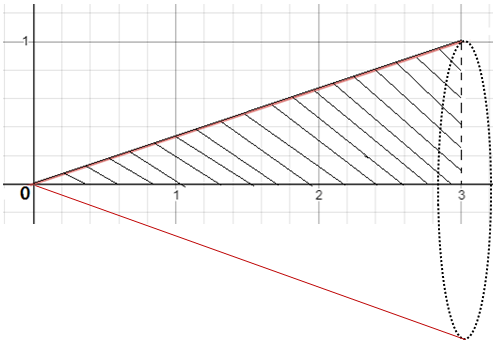
A) -21 B) -20 C) -18 D) -12 E) 1

78) $F(x,y) = -x + y + 1 - e^{xy} = 0$

$\Rightarrow F'(0,0) = ?$

A) $-\frac{3}{4}$ B) $\frac{5}{3}$ C) 0 D) -1 E) 1

79)



The area between the x axis and the lines $f(x) = \frac{x}{3}$, $x = 0$, $x = -2$ is rotated 180 degrees around the x axis. So, what is the volume of the solid that will be formed in this way?

A) $\frac{\pi}{3}$ B) $\frac{\pi}{2}$ C) $\frac{3\pi}{2}$ D) 2π E) π

80)

$f = \{(x,y) : x + 3y = 3 ; x,y \in \mathbb{R}\}$

$g = \{(x,y) : 3x + y = 3 ; x,y \in \mathbb{R}\}$

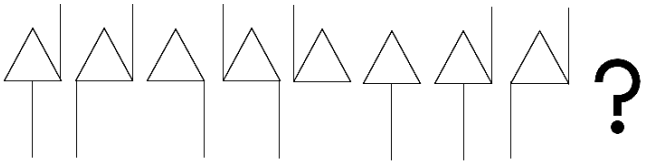
According to the f and g relations are given above, which of the following is true ?

A) $(f+g)(3) = -1$ B) $(f+g)\left(\frac{3}{4}\right) = 1$

C) $(f+g)\left(\frac{3}{4}\right) = \frac{3}{2}$ D) $(f+g)\left(\frac{3}{4}\right) = \frac{9}{16}$

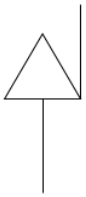
E) $(f+g)(1) = \frac{3}{4}$

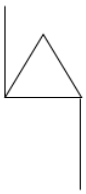
1)



تسلسل الشكل أعلاه دوري، أي مما يأتي يجب أن يكون في نهاية هذه السلسلة؟

A) 

B) 

C) 

D) 

E) 

2)

$$\frac{1}{4}+\frac{2}{5}+\frac{3}{4}+\frac{4}{5}+\frac{5}{4}+\frac{6}{5}+\ldots+\frac{19}{4}+4=?$$

A) 44 B) 45 C) 46 D) 47 E) 48

3) $y \neq 0$, $x \neq 0$,

$$\left(\frac{\frac{y}{x}-\frac{x}{y}}{\frac{1}{x}-\frac{1}{y}}\right).\left(\frac{x}{y-x}+\frac{y}{y+x}\right)=?$$

ما هو أبسط شكل للعبارة أعلاه؟

A) $\frac{x+y}{y-x}$ B) $\frac{x-y}{x+y}$ C) $\frac{x^2+y^2}{x.y}$

D) $\frac{x^2-y^2}{x.y}$ E) $\frac{x^2+y^2}{y-x}$

4)

$$\left.\begin{array}{l} x=1,\overline{2} \\ y=2,\overline{4} \\ z=4,\overline{8} \end{array}\right\} \rightarrow \frac{x+y}{z}=?$$

A) $\frac{3}{4}$ B) $\frac{30}{44}$ C) $\frac{13}{24}$ D) $\frac{33}{24}$ E) $\frac{1}{2}$

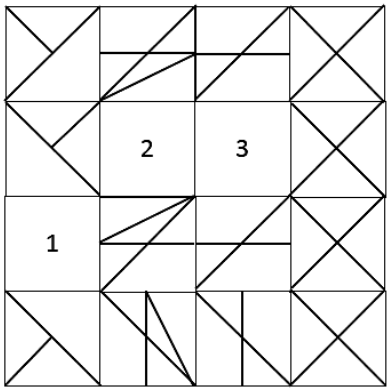
5) $\left(3^2+1\right)\left(3^4+1\right)\left(3^8+1\right)=X$

وفقاً للمعادلة المعطاة، أي مما يأتي يساوي العدد 9^8

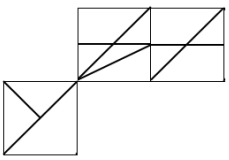
A) $8X$ B) $8X-1$ C) $8X+1$

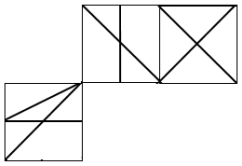
D) $8X+8$ E) $16X$

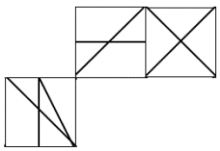
6)

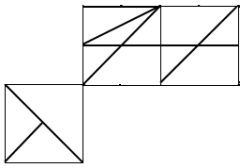


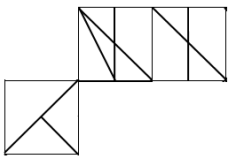
أي من الأشكال الآتية سيأتي محل الأماكن المرقمة بـ ١،٢،٣ في الشكل أعلاه؟

A) 

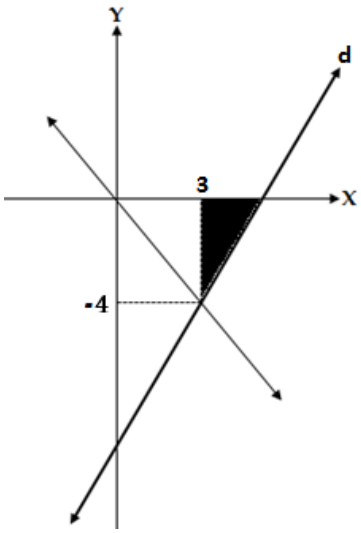
B) 

C) 

D) 

E) 

7)

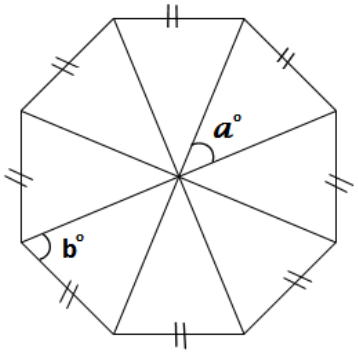


في نظام الإحداثيات، مساحة المنطقة الملونة بالأسود يساوي $3cm^2$. وفقاً للشكل أعلاه أي مما يأتي هو معادلة المستقيم d

A) $y=\frac{3x-4}{12}$ B) $y=\frac{4x-3}{16}$ C) $y=\frac{8x-36}{3}$

D) $y=\frac{4x-18}{3}$ E) $y=\frac{3x-18}{8}$

8)

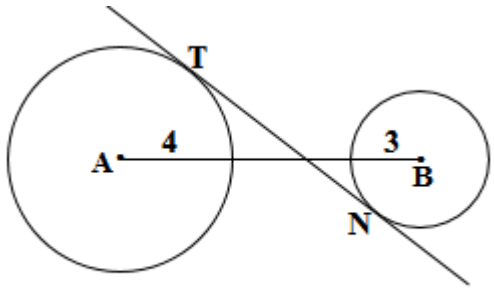


$$a^\circ + b^\circ = ?$$

A) $105{,}5^\circ$ B) $107{,}5^\circ$ C) 109°

D) $112{,}5^\circ$ E) 111°

9)

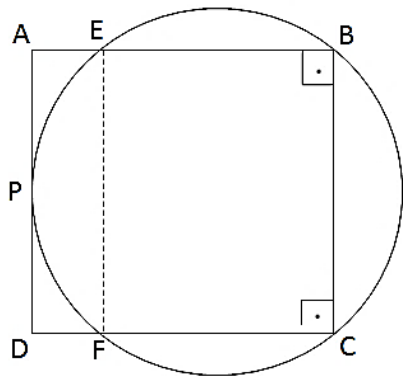


$|AB| = 14\ cm \rightarrow |TN| = ?$

نصف قطر الدائرة الكبيرة 4cm ، نصف قطر الدائرة الصغيرة 3cm
$[TN]$ مماس للدائرتين. $|TN| = ?$

A) $7\sqrt{3}$ B) $7\sqrt{2}$ C) $7\sqrt{5}$
D) $14\sqrt{2}$ E) $14\sqrt{5}$

10)

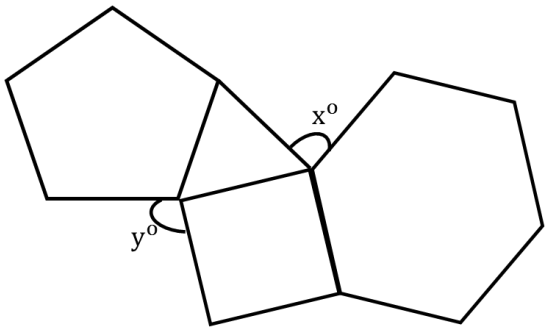


$|AP| = |PD| = 6\ cm$
$|AB| = |BC| = |CD| = |DA|$

EFCB مساحة المستطيل كم سم٢

A) 96 B) 108 C) 112 D) 120 E) 156

11)

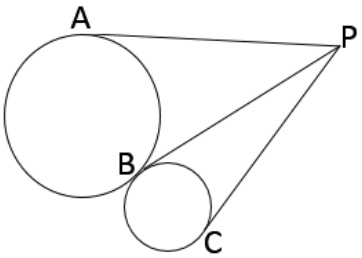


جميع أضلاع المضلعات الواردة أعلاه متساوية،

بناء عليه $y - x = ?$

A) 22 B) 18 C) 16 D) 14 E) 12

12)

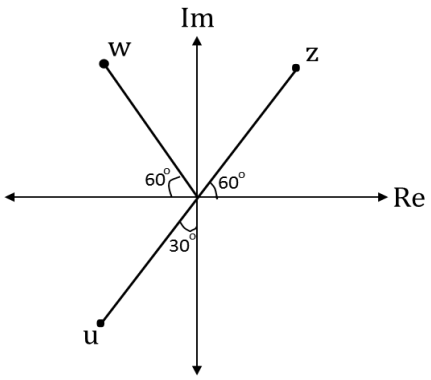


أجزاء المستقيمات PA, PB, PC هي مماسات للدائرتين. نصف قطر الدائرة الكبيرة ٢سم، ونصف قطر الدائرة الصغيرة ١سم
بناء عليه أي من العلاقات الواردة أدناه صحيحة؟

A) $|PC| < |PB| = |PA|$ B) $|PC| = |PB| < |PA|$
C) $|PC| < |PB| < |PA|$ D) $|PC| = |PB| = |PA|$
E) $|PC| > |PB| = |PA|$

13)

z, w, u أعداد مركبة



$$|z| = |w| = |u| = 2 \quad \rightarrow \quad z + w + u = ?$$

A) $-1 - i.\sqrt{3}$ B) $-1 + i\sqrt{3}$

C) $-3 - i.\sqrt{3}$ D) $-3 + i.\sqrt{3}$

E) $1 - 3.\sqrt{3}.i$

14) $r = e^{x+2} \quad \rightarrow \quad x = ?$

A) $-2 + \ln r$ B) $\ln\left(r^2 - 2\right)$ C) $-\ln\left(\frac{r}{2}\right)$

D) $-\frac{\ln r}{2}$ E) $\sqrt{r}$

15)

كم مساحة المنطقة الواقعة بين المستقيم $y = x + 4$ والمنحني $y = \sqrt{16 - x^2}$

A) $4(\pi + 2)$ B) $4(\pi - 2)$ C) $4(\pi - 1)$

D) $4(\pi + 1)$ E) $4(2\pi - 1)$

16)

$$\left(\frac{2a}{b^2} - \frac{b}{4a}\right)^6$$

عند حلِّ العبارة ذات الحدين أعلاه، أي مما يأتي هو المصطلح الرابع من البداية؟

A) $\frac{a}{5b^3}$ B) $-\frac{5a}{8b^3}$ C) $-\frac{5}{2b^3}$

D) $\frac{5}{8b^3}$ E) $-\frac{1}{64b^3}$

17)

&	a	b	c	d	e
a	b	c	d	e	a
b	c	d	e	a	b
c	d	e	a	b	c
d	e	a	b	c	d
e	a	b	c	d	e

$(a \,\&\, c) \,\&\, X = b \rightarrow X = ?$

A) a B) b C) c D) d E) e

18)

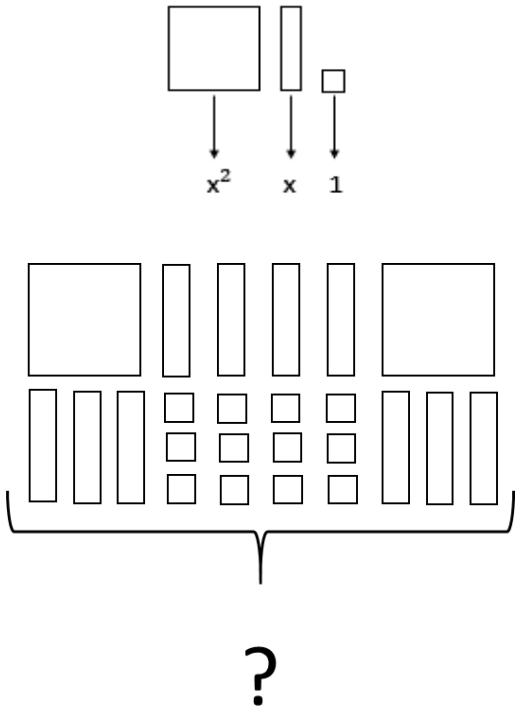
$$X = \begin{bmatrix} 1 & 2 & 3 \\ 0 & 1 & 2 \\ 0 & 0 & 1 \end{bmatrix}_{3\times3} \rightarrow X^4 = ?$$

A) $\begin{bmatrix} 1 & 8 & 81 \\ 0 & 5 & 8 \\ 0 & 0 & 1 \end{bmatrix}_{3\times3}$ B) $\begin{bmatrix} 1 & 12 & 32 \\ 0 & 10 & 12 \\ 0 & 0 & 1 \end{bmatrix}_{3\times3}$

C) $\begin{bmatrix} 1 & 10 & 15 \\ 0 & 1 & 10 \\ 0 & 0 & 1 \end{bmatrix}_{3\times3}$ D) $\begin{bmatrix} 1 & 8 & 36 \\ 0 & 1 & 8 \\ 0 & 0 & 1 \end{bmatrix}_{3\times3}$

E) $\begin{bmatrix} 1 & 20 & 30 \\ 0 & 10 & 30 \\ 0 & 0 & 20 \end{bmatrix}_{3\times3}$

19)



A) $(x+3)(2x+9)$ B) $(x+4)(2x+3)$

C) $(x+3)(2x-4)$ D) $(x+2)(2x+6)$

E) $(2x+2)(x+6)$

20)

$$z = sin\frac{5\pi}{6} - i.cos\frac{5\pi}{6} \quad \rightarrow \quad z^2 = ?$$

A) $-i+\sqrt{3}$ B) $\frac{1}{2}\left(-1+i\sqrt{3}\right)$

C) $-\frac{1}{2}\left(-\sqrt{3}+i\right)$ D) $\frac{1}{2}\left(1+i\sqrt{3}\right)$

E) $\frac{1}{4}\left(-1-i\sqrt{3}\right)$

21) $a = \frac{21}{5}$, $b = \frac{7}{2}$

c عدد يقع على مستقيم العدد الطبيعي بين العددين a و b المسافة بين العددين c و a تساوي ٦ أضعاف المسافة بين c و b ، وفقاً لذلك أي مما يأتي هو العدد c

A) $\frac{77}{20}$ B) 4 C) $\frac{96}{25}$ D) $\frac{83}{20}$ E) $\frac{18}{5}$

22)

$$\frac{\frac{5}{\frac{1}{0,05}} - \frac{0,005}{\frac{1}{5}}}{\frac{22,5}{10}} = ?$$

A) 25 B) 10 C) 100 D) 0,1 E) 0,5

23) $X = 20^3 . 40^4 . 150^5 - 1$

كم منزلة من منازل آخر العدد X هي ؟

A) 13 B) 14 C) 15 D) 16 E) 17

24)

$$\frac{a}{b} = \frac{x}{y} = \frac{c}{d} = \frac{2}{3} \Rightarrow \frac{a.y.d}{b.x.c} - \frac{1}{2} = ?$$

A) -1 B) 0 C) 1 D) 2 E) -2

25)

$$A_{n\times n} = [a_{ij}] = \begin{cases} i.j & , \ i < j \\ j & , \ i = j \\ -i + j & , \ i > j \end{cases}$$

$(i, j = 1,2, \dots, n)$

ما محدد المصفوفة $A_{3\times 3}$ المراد كتابتها وفق القاعدة الموضحة أعلاه؟

A) 12 B) 9 C) 0 D) -9 E) -18

26)

$$\int \frac{4x}{x^2 - 1} dx = ?$$

A) $ln(x^2 - 1)^2$ B) $\frac{1}{2} ln(x^2 - 1)$ C) $ln \frac{1}{x^2 - 1}$
D) $ln \frac{x-1}{x+1}$ E) $2\, ln \frac{x+1}{x-1}$

27)

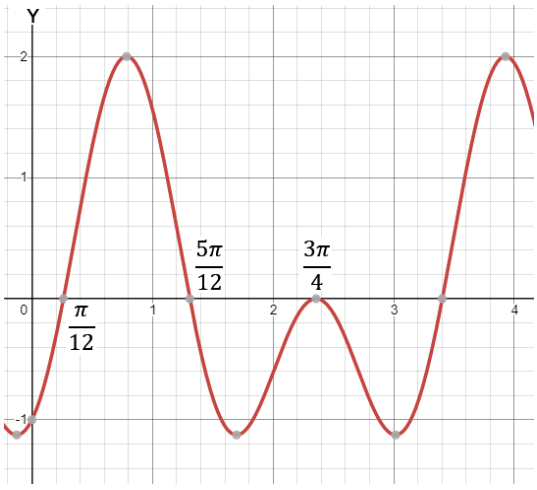
أي مما يأتي صحيح؟

A) $log_{\frac{1}{4}} 2 = \frac{1}{2}$ B) $ln\left(\frac{1}{e^3}\right) = \frac{1}{3}$

C) $log_{100} 1 = -\frac{1}{2}$ D) $log_{\sqrt{1000}} 0{,}01 = -\frac{4}{3}$

E) $log_{\sqrt{0{,}1}} \sqrt[3]{0{,}001} = 20$

28)



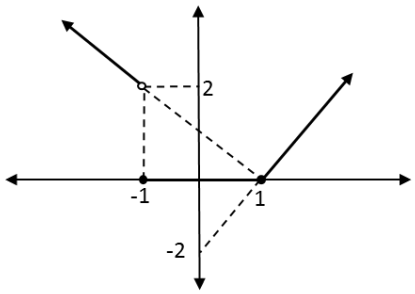
أي مما يأتي هو الدالة الموضحة بالرسم البياني أعلاه؟

A) $y = cos4x + sin4x$ B) $y = cos2x - sin4x$

C) $y = cos2x + sin2x$ D) $y = sin2x - 2cosx$

E) $y = sin2x - cos4x$

29)



إلى أي دالة مما يأتي ينتمي الشكل المذكور أعلاه؟

A) $f(x)=\begin{cases} -x+1, & x\le -2 \\ 0, & -2<x\ge 1 \\ 2x-2, & x>1 \end{cases}$

B) $f(x)=\begin{cases} -x-1, & x<-1 \\ 0, & -1<x<1 \\ 2x-2, & x>1 \end{cases}$

C) $f(x)=\begin{cases} -x+1, & x<-1 \\ 0, & -1\le x\le 1 \\ 2x-2, & x>1 \end{cases}$

D) $f(x)=\begin{cases} -x+1, & x\le -1 \\ 0, & -1<x<1 \\ 2x-2, & x\ge 1 \end{cases}$

E) $f(x)=\begin{cases} x+1, & x\le -1 \\ 0, & -1<x<1 \\ -2x+2, & x\ge 1 \end{cases}$

30)

$$x^3-3x^2-x+3\le 0$$

أي مما يأتي هو مجموعة الحلول في المجال [0,4] من علاقة عدم المساواة أعلاه؟

A) $[-1,0]$ B) $[-1,1]$ C) $\{1,3\}$

D) $\{-1,1\}$ E) $[1,3]$

31)

$$\int \frac{dx}{e^x}=?$$

A) $e^{-x}+c$ B) $-e^{-x}+c$ C) e^x+c

D) $lnx+c$ E) $e^x.lnx+c$

32)

$$\lim_{x\to\pi}\frac{cos4x-sin\frac{x}{2}}{x-\pi}=?$$

A) $-\pi$ B) 0 C) -1 D) 1 E) ∞

33) $x = A^2 + A, \quad y = A^3 - 2A$

$$\left.\frac{d^2y}{dx^2}\right|_{A=0} = ?$$

A) -4 B) -1 C) 0 D) 4 E) 8

34)

ما القيمة الدنيا التي يمكن أن يأخذها مجموع إحداثيات نقطة ما على القطع المكافئ $y = x^2 - 5x + 8$

A) -4 B) -3 C) 4 D) 2,5 E) -2

35)

$$f(x) = \begin{cases} a - x\,, & x < -3 \\ x - a^2, & -3 \le x \le 4 \\ 4 - a\,, & 4 < x \end{cases},$$

$f(-4) = f(4) - a$.

ما قيمة a التي تجعل الدالة $f(x)$ متقطعة (غير مستمرة) في النقطة $x = 4$ والنقطة $x = -3$

A) -2 B) -1 C) 2 D) 1 E) 0

36)

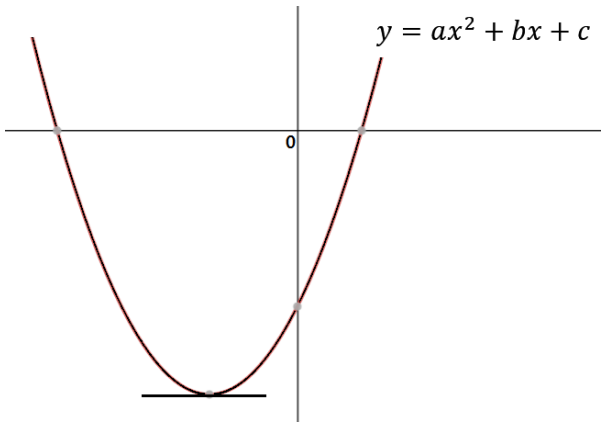
$$3a - \frac{3}{a} = a^2 + \frac{1}{a^2}$$

ما هي القيمة الدنيا لـ a في المعادلة أعلاه؟

A) $1 + \sqrt{2}$ B) $\frac{1+\sqrt{5}}{2}$ C) $1 - \sqrt{2}$

D) $2 - \sqrt{5}$ E) $\frac{1-\sqrt{5}}{2}$

37)



أي من الخيارات الآتية صحيح وفق الشكل أعلاه؟

A) $\frac{a}{c-b} > 0$ B) $\frac{b}{c} > 0$ C) $a + b - c > 0$

D) $a.c > 0$ E) $a < 0$

38)

$$4+\frac{8}{5}+\frac{16}{25}+\frac{32}{125}+\cdots=?$$

A) $\frac{10}{3}$ B) $\frac{20}{7}$ C) $\frac{20}{3}$ D) $\frac{120}{7}$ E) 7

39)

$$\sum_{i=1}^{5}\left(\sum_{j=1}^{i} j\right)=?$$

A) 42 B) 35 C) 33 D) 30 E) 29

40)

$$f(x)=(3+sinx)(-1+sinx)$$

ما أقل قيمة يمكن أن تأخذها الدالة $f(x)$

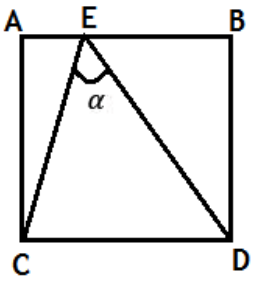
A) 0 B) -1 C) -2 D) -3 E) -4

41)

$$\frac{3-x}{x^2+x-6}=\frac{A}{x+3}-\frac{B}{x-2} \quad \rightarrow \quad A+B=?$$

A) $\frac{9}{5}$ B) $-\frac{12}{5}$ C) $-\frac{3}{5}$ D) $-\frac{7}{5}$ E) 0

42)



$m(\hat{A})=m(\hat{B})=m(\hat{C})=m(\hat{D})=90^0$

$|EB|=2.|AE|, \quad |AB|=|BD|=|CD|=|AC|$

$\tan(\alpha)=?$

A) $\frac{10}{9}$ B) $\frac{20}{7}$ C) $\frac{9}{7}$ D) $\frac{7}{12}$ E) $\frac{1}{3}$

43)

$P(x)=ax^2-4$,

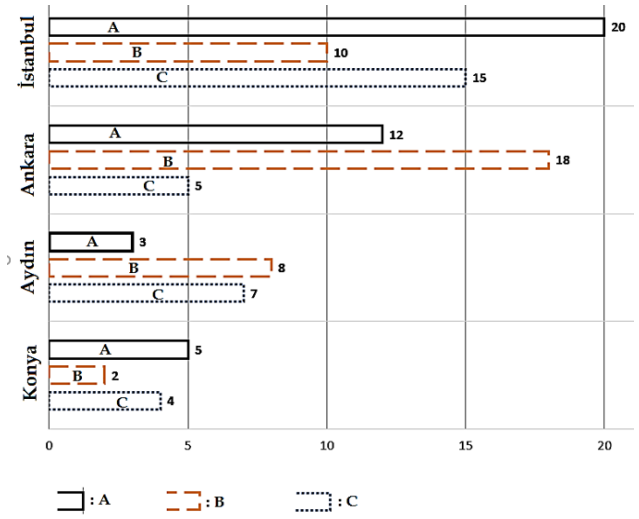
$Q(x)=7x^2-bx-2$,

$\frac{d}{dx}(P(x-2))=\frac{d}{dx}(Q(x))$

$a+b=?$

A) 35 B) 30 C) 42 D) 40 E) -18

اجب على الاسئلة الاربعة التالية وفقا للرسم البياني ادناه



من خلال الرسم البياني أعلاه، تم إعطاء العلاقات إحصائياً بين أعداد السياح القادمين من الدول A، B، C إلى ولايات قونيا وآيدن وأنقرة وإسطنبول

44)

ما نسبة عدد السياح القادمين إلى ولاية اسطنبول من دولة ***C*** إلى عدد القادمين من دولة ***B***

A) $\frac{1}{2}$ B) $\frac{2}{3}$ C) $\frac{3}{2}$ D) $\frac{3}{4}$ E) $\frac{5}{4}$

45)

ما نسبة إجمالي عدد السياح القادمين إلى ولاية آيدن إلى إجمالي عدد السياح القادمين إلى ولاية إسطنبول؟

A) $\frac{7}{15}$ B) $\frac{2}{5}$ C) $\frac{15}{24}$ D) $\frac{3}{4}$ E) $\frac{5}{4}$

46)

كم تساوي نسبة إجمالي عدد السياح القادمين من دولة B إلى عدد السياح القادمين من دولة ***B***

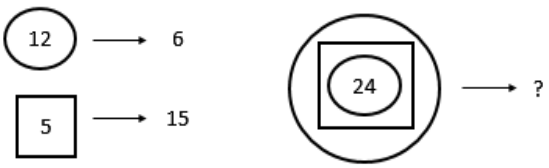
A) 0,72 B) 0,80 C) 0,85 D) 0,90 E) 0,95

47)

إذا تم التدقيق في عدد السياح القادمين من دولة C كم بالمئة يزيد عدد السياح القادمين إلى آيدن عن عدد السياح القادمين إلى أنقرة؟

A) %40 B) % 35 C) % 30 D) % 25 E) % 20

48)



A) 6 B) 8 C) 9 D) 12 E) 18

49) $3\times10^5+4\times10^3+6\times10^2+6=?$

A) 300 466 B) 304 606 C) 304 060

D) 30 406 060 E) 3 004 606

50)

$$100\ \boxed{\#}\ 20 \rightarrow 5$$

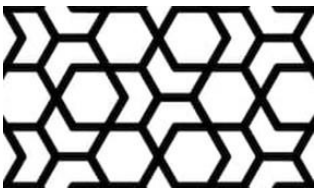
$$9\ \boxed{\%}\ 2 \rightarrow 81$$

$$5\ \boxed{*}\ 4 \rightarrow 9$$

$$\left((6\ \boxed{\%}\ 2)\ \boxed{*}\ 4\right)\ \boxed{\#}\ 2 \rightarrow ?$$

A) 40 B) 32 C) 24 D) 20 E)18

51)



كم واحداً على الأكثر من الشكل أدناه يمكن العثور عليه في الشكل أعلاه؟

A) 8 B) 9 C) 10 D) 11 E) 12

52) $10^{\frac{1}{2}}\times100^{\frac{1}{3}}\times1000^{\frac{1}{4}}=?$

A) $\sqrt[12]{10^{21}}$ B) $\sqrt[6]{10^{11}}$ C) $\sqrt[12]{10^{23}}$ D) 100 E) $\sqrt[12]{10^{19}}$

53) $0{,}009\times0{,}02=?$

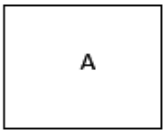
A) $1{,}8\times10^{-4}$ B) $1{,}8\times10^{-5}$ C) $1{,}8\times10^{-6}$

D) $1{,}2\times10^{-6}$ E) $1{,}5\times10^{-4}$

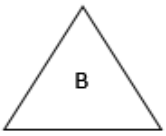
54)

A) 25 B) 23 C) 22 D) 21 E) 20

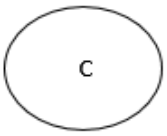
اجب على هذة الاسئلة الثلاثة (٥٥,٥٦,٥٧) بطريقة المجموعات



A={...,2,4,6,8,10,...}



B={...,3,6,9,12,...}



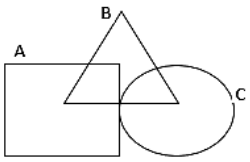
C={...,5,10,15,20,...}

بعض الاعداد الصحيحة التي هي عناصر من المجموعات

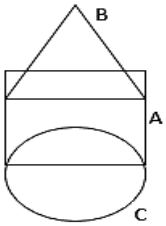
A,B,C الموضحة اعلاه ظاهرة بجانب هذة المجموعات

55) اي واحد ادناه هو صحيح؟

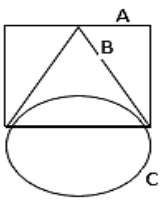
A)



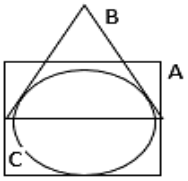
B)



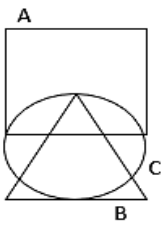
C)



D)



E)



56)

إلى أي من المجموعات أدناه ينتمي العدد الصحيح ١٠٥

A) $A \cap B \cap C$ B) $A \cap (B \cup C)$

C) $C - (A \cap B)$ D) $(B - C) - A$

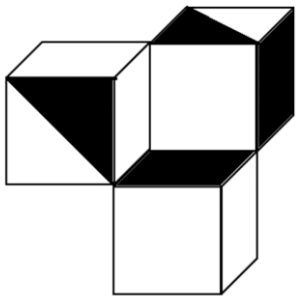
E) $(A - B) \cap C$

57)

$(A - B) - C$ أي من الأعداد الصحيحة أدناه ينتمي إلى المجموعة

A) 64 B) 60 C) 54 D) 48 E) 45

58)

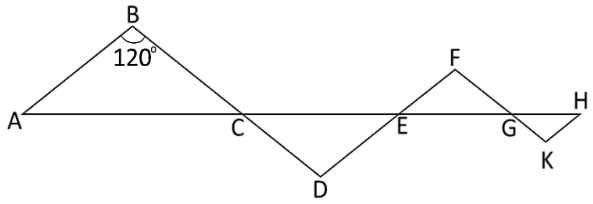


كم النسبة المئوية الملونة بالأسود من المسطحات المرئية للشكل المكون من ثلاثة مكعبات؟

A) 22,2 B) 33,3 C) 44,4

D) 25 E) 40

59)



$|AB|//|DF|//|HK|$, $|BD|//|FK|$,

$m(\widehat{ABC}) = 120^{\circ}$, $|AC| = 12\ cm.$

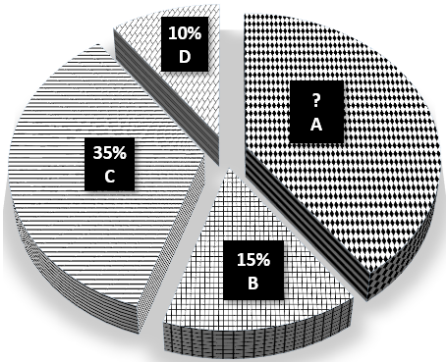
$|CE| = 9\ cm.\ |EG| = 6\ cm.\ |GT| = 3\ cm.$

كم سم مجمل مساحة المثلثات المتساوية الساقين في الشكل أعلاه؟

A) $\frac{45\sqrt{3}}{2}$ B) $\frac{15\sqrt{3}}{2}$ C) $\frac{15\sqrt{3}}{4}$

D) $\frac{45\sqrt{3}}{4}$ E) $5\sqrt{3}$

60)

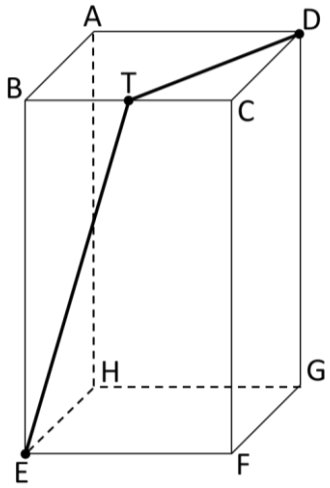


تمثل الشكل الدائري أعلاه النسبة المئوية لعدد طلاب ٤ جامعات في مدينة ما، إذا كان عدد طلاب الجامعة **B** مساوياً ٤٥٠٠، كم يساوي عدد طلاب الجامعة **A**

A) 9 000 B) 10 000 C) 11 000

D) 12 000 E) 12 500

61)



$|BE| = 4$, $|AB| = 2$, $|BT| = |TC|$.

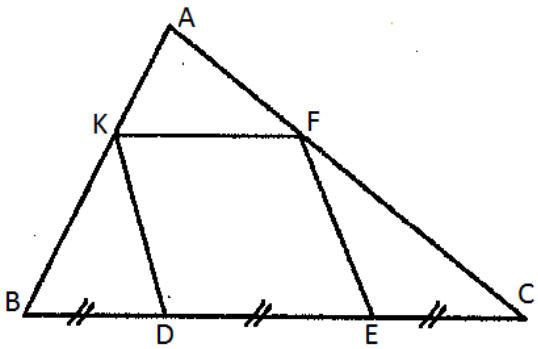
الشكل أعلاه موشور مربع، وفقاً للمعطيات أيّ من الخيارات أدناه صحيح؟

A) $3 < |ET| + |TD| < 4$ B) $4 < |ET| + |TD| < 5$

C) $5 < |ET| + |TD| < 6$ D) $6 < |ET| + |TD| < 7$

E) $7 < |ET| + |TD| < 8$

62)



$|DE| = |EF| = |FK| = |DK|$

$|BD| = |DE| = |EC|$, $\frac{|AK|}{|KB|} = ?$

A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{2}{3}$ D) $\frac{1}{4}$ E) $\frac{1}{9}$

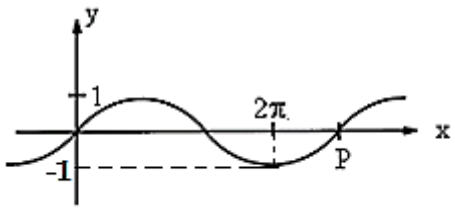
63)

أي من الأعداد أدناه هوالأكبر؟

A) $\cos\left(\frac{3\pi}{2}\right)$ B) $\cos\left(\frac{\pi}{3}\right)$ C) $\cos\left(\frac{\pi}{4}\right)$

D) $\cos\left(\frac{\pi}{6}\right)$ E) $\cos(0^\circ)$

64)

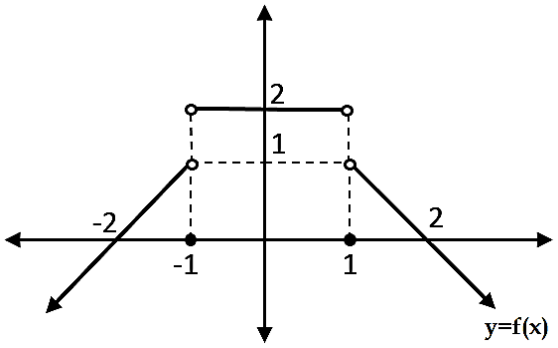


الرسم البياني أعلاه يعود للدالة $y = \sin(ax)$

ما الزاوية المقابلة للنقطة **P**؟

A) $\frac{2\pi}{3}$ B) $\frac{5\pi}{3}$ C) $\frac{7\pi}{3}$ D) $\frac{8\pi}{3}$ E) $\frac{10\pi}{3}$

أجب عن الأسئلة (٦٥-٦٦-٦٧) وفقاً للشكل أدناه.



65)

$$f(1) + f(0) + f(-1) = ?$$

A) 1 B) 2 C) 3 D) 0 E) -2

66)

$$\frac{f\left(\frac{1}{2}\right)}{f\left(-\frac{1}{2}\right)} = ?$$

A) 0 B) 1 C) -1 D) 2 E) -2

67)

$$f(3) + f(-3) = ?$$

A) 0 B) 1 C) -1 D) 2 E) -2

68) $x.y.z.t < 0$

$x.y.z > 0$

$y.t > 0$

$x < 0$

في أي من الخيارات أدناه أعطيت إشارات المتغيرات x, y, z, t بشكل صحيح؟

	x	y	z	t
A)	−	−	−	−
B)	−	−	−	+
C)	−	−	+	−
D)	−	+	+	−
E)	+	−	−	+

69)

$345671 \rightarrow 188$

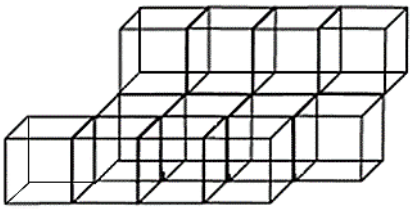
$456782 \rightarrow 2210$

$135246 \rightarrow 1110$

$211231 \rightarrow ?$

A) 331 B) 231 C) 1221 D) 83 E) 64

70)



الشكل أعلاه ثلاثي الأبعاد مكون من ١٢ مكعباً متماثلاً، يتم طلاء أسطح هذا البناء من الخارج. وفي نهاية هذه العملية يتم فصل المكعبات بعضها عن بعضها، ما مجموع عدد الأوجه المطلية للمكعبات في حالة الانفصال؟

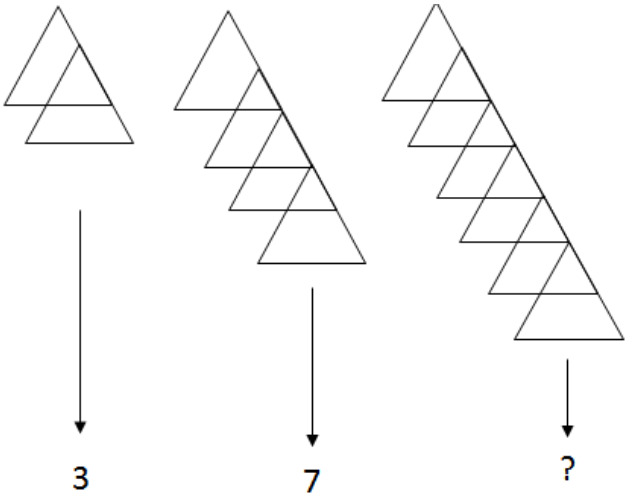
A) 44 B) 48 C) 52 D) 64 E) 88

71)

$$\begin{bmatrix}2\\5\\6\\3\\1\end{bmatrix} \rightarrow \begin{bmatrix}1\\2\\5\\6\\4\end{bmatrix} \rightarrow \begin{bmatrix}4\\1\\2\\5\\7\end{bmatrix} \rightarrow \begin{bmatrix}7\\4\\1\\2\\6\end{bmatrix} \rightarrow ?$$

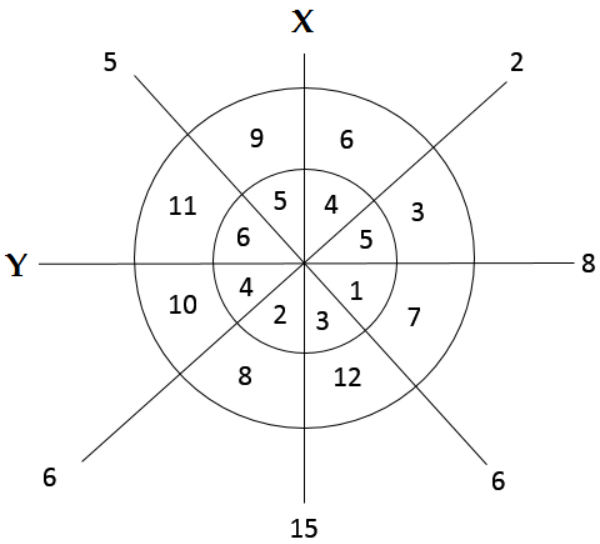
A) $\begin{bmatrix}6\\7\\5\\4\\3\end{bmatrix}$ B) $\begin{bmatrix}6\\7\\4\\1\\3\end{bmatrix}$ C) $\begin{bmatrix}6\\7\\4\\1\\6\end{bmatrix}$ D) $\begin{bmatrix}5\\3\\2\\1\\0\end{bmatrix}$ E) $\begin{bmatrix}5\\6\\1\\2\\3\end{bmatrix}$

72)



A) 10 B) 11 C) 13 D) 15 E) 21

73)



X+Y=?

A) 10 B) 15 C) 18 D) 25 E) 28

74) $|a-3|=|b+1|=2$

في نظام الإحداثيات ثمة علاقة بين النقطتين (a,b) الموجودتين على المحورين. كم المسافة بين النقطة الأقرب إلى المركز؟

A) 1 B) $\sqrt{2}$ C) $\sqrt{3}$ D) $\sqrt{10}$ E) $\sqrt{26}$

75) $\dfrac{\sqrt{128}}{\sqrt[3]{128}} = a.\sqrt[6]{a} \rightarrow a = ?$

A) 1 B) 2 C) 4 D) 8 E) 16

76)

1	2	3	5	8	13	21	x	y	89

?

ما العدد الذي يمكن أن يحل محل x و y في نظم الأعداد أعلاه؟

A) $x=28$, $y=39$ B) $x=31$, $y=48$ C) $x=34$, $y=55$

D) $x=34$, $y=59$ E) $x=36$, $y=62$

77)

$$\int_a^3 \frac{1}{\sqrt{4-x}}dx = 8 \quad \rightarrow \quad a = ?$$

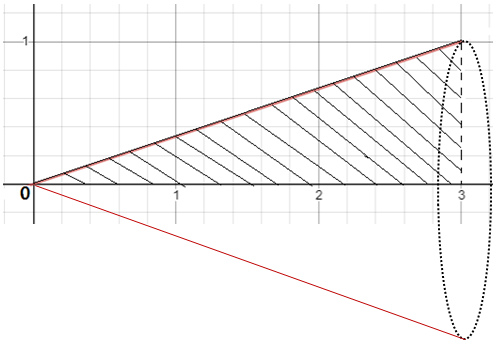
A) -21 B) -20 C) -18 D) -12 E) 1

78) $F(x,y) = -x + y + 1 - e^{xy} = 0$

$\Rightarrow F'(0,0) = ?$

A) $-\frac{3}{4}$ B) $\frac{5}{3}$ C) 0 D) -1 E) 1

79)



كم سم٣ هو حجم الجسم المتشكل من تدوير المنطقة التي بين المستقيمات $x = 3$، $x = 0$، $f(x) = \frac{x}{3}$ و المحور x حول المحور x ١٨٠ درجة؟

A) $\frac{\pi}{3}$ B) $\frac{\pi}{2}$ C) $\frac{3\pi}{2}$ D) 2π E) π

80)

$f = \{(x,y) : x + 3y = 3 ; x,y \in \mathbb{R}\}$

$g = \{(x,y) : 3x + y = 3 ; x,y \in \mathbb{R}\}$

أي مما يأتي صحيح وفقاً للعلاقتين f و g المذكورتين أعلاه؟

A) $(f+g)(3) = -1$ B) $(f+g)\left(\frac{3}{4}\right) = 1$

C) $(f+g)\left(\frac{3}{4}\right) = \frac{3}{2}$ D) $(f+g)\left(\frac{3}{4}\right) = \frac{9}{16}$

E) $(f+g)(1) = \frac{3}{4}$

RULES FOR THE CONDUCT OF THE EXAMINATION

1. No materials or electronic devices shall be brought into the room or used at an examination. Unauthorized materials include, but are not limited to: books, dictionaries, class notes, or aid sheets, weapons, explosive materials. Unauthorized electronic devices include, but are not limited to: cellular (mobile) telephones, laptop computers, calculators, MP3 players (such as an Ipod), Personal Digital Assistants ("PDA" such as a Palm Pilot or Blackberry), pagers, electronic dictionaries, Compact Disc Players, Mini Disc Players, Smart Watches and Smart Glasses. Anyone who violate these rules will be penalized by invalidating their exam results.

2. KBU-ULOS Exam duration: 120 minutes.

3. No candidate who has submitted their question paper to those supervising the examination and have left the test room, for any reason whatsoever, will be allowed to re-enter the room.

4. Candidates will NOT be permitted to enter an examination room later than first thirteen (30) minutes after the commencement of the examination, nor to leave until at least half an hour after the examination has commenced. Candidates shall remain seated at their desks during the final fifteen (15) minutes of the examination. Students who arrive following the first 30 minutes after the examination has started will NOT be allowed in the test rooms.

5. Candidates shall not communicate with one another in any manner whatsoever during the examination. During the test, it is forbidden to ask questions of or talk to those supervising the exam. It is also against the rules of the examination for supervisors to converse or whisper to any candidates. Similarly, it is forbidden to ask another candidate for a pencil, eraser, or anything else.

6. During the examination, candidates are required to comply with all the directions given to them by the supervisors; they also have the authority to assign seats to candidates. You must follow all instructions given to you. Otherwise, your name and application number will be taken, and your examination will be invalidated.

7. If, during the test anyone is found cheating, trying to cheat, or helping someone else to cheat, his/her name and application number will be recorded, and his/her answer sheet will not be considered for evaluation. Supervisors do not have to warn candidate(s) about their act of cheating. This is the candidates' responsibility. During the examination, it is extremely important that you take utmost attention for not letting your answer sheet be seen by another candidate.

8. It is important to fill in the necessary areas on the answer sheet. You must use only a soft lead pencil for writing your name and other information or marking answers. No type of pen may be used. Mark your answers only on the answer sheet. For each question mark one letter (A, B, C, D, or E) on your answer sheet. Answers marked only in the question books will be ignored.

9. Do not open the question book until you are told to do so. After required you should check throughout your question book and make sure that no pages are missing and all pages are readable. You should inform the supervisors immediately in such an event so that your test booklet can be changed. Check whether the letter printed at the top of each page in the question book is the same as the letter printed on the cover. If you realize such a disparity later in the exam, you should ask those supervisors in charge for a new question book that matches with the type you have been working on up to that time. Remember to mark the type of the question book on your answer sheet; otherwise, your exam will be invalid, since it will not be possible to evaluate it.

10. You may use the blank spaces on the pages of the question book as scrap paper for writing or calculating purposes.

11. No one, including supervisors in charge, is allowed to smoke a cigarette, or any other tobacco products during the examination.

12. It is strictly forbidden to make a record of your answers on any paper and take it out.

13. At the end of the examination, hand in both the question book and the answer sheet. Question books and other material issued for the examination shall not be removed from the examination room.

القواعد التي يجب إتباعها في الامتحان

1 **يمنع إدخال الهاتف الجوال إلى الامتحان منعا باتا**
يمنع اصطحاب الاجهزة التالية إلى الامتحان ؛ أجهزة اللاسلكي والتخابر والاتصالات وما شابهها والحاسوب الصغير و الساعات المخالفة للساعات العادية وكافة أنواع الأجهزة التي تحمل مواصفات الحواسيب والأسلحة والمعدات وأوراق المسودات والدفاتر والكتب والقواميس والقواميس الالكترونية والألة الحاسبة والمساطر الحسابية والفرجال والمنقلة والمسطرة وما شابهها. والطلاب المرشحون الذين يدخلون الإمتحان مصطحبين هذه الاجهزة ستكتب أرقامهم الأجنبية في مسودة ضبط القاعة الامتحانية وسيعتبر امتحانهم لاغيا

2 **مدة الاجابة عن الأسئلة في هذا الأمتحان هي 120 دقيقة**

3 الطالب المرشح الذي يسلم أوراقه ويغادر قاعة الامتحان لايمكن إعادته مرة أخرى إلى القاعة مهما كانت الأسباب

4 ممنوع الخروج من القاعة لأي سبب كان أثناء الامتحان. ولن يسمح لأي مرشح بالخروج في أول 30 دقيقة من الامتحان حتى ولو أتمه ،كما يُمنع الخروج آخر 15 دقيقة من الامتحان. ولن يتم ادخال أي طالب إلى القاعة بعد مرور 30 دقيقة على بدء الامتحان

5 ممنوع الكلام مع المراقبين أو سؤالهم طوال مدة الامتحان.ويُمنع كلام المراقبين مع الطلاب بصوت منخفض أو عن قرب. كما يُمنع الطلاب منعاً باتاً من طلب قلم أو ممحاة وما شابهها من الأشياء من بعضهم البعض

6 يجب الالتزام بكل توجيهات وتحذيرات المراقبين اثناء الامتحان. ويمكن للمراقبين تغيير أماكن الطلاب عند الضرورة. واعتبار امتحانكم مقبولاً يرتبط بإلتزامكم بقوانين الامتحان قبل كل شيء. وفي حال تصرفكم بشكل مخالف للتعليمات أو عدم الالتزام بالتوجيهات والتحذيرات سيتم كتابة رقم هويتكم في مسودة الضبط ويعتبر امتحانكم لاغياً

7 ستكتب في مسودة ضبط القاعة الامتحانية أرقام هويات الطلاب الذين يقومون بالغش أو يحاولون الغش أو الذين يغششون أو يساعدون على الغش، وسيتم اعتبار امتحان هؤلاء الطلاب لاغيًا. والمراقبون ليسوا ملزمين بتحذير الطلاب الذين يغشون أو يساعدون على الغش؛ فالمسؤولية في هذا تقع على عاتقكم. ومن المهم للطالب إمساكهُ بورقة الإجابة بشكلٍ لايراه الطلاب الاخرون

8 يجب عليكم ملء الفرغات الموجودة في ورقة الاجابة. ويجب أن يستخدم القلم الرصاص في كتابة أي شيء في ورقة الإجابة وفي جميع الاشارات.ويمنع استخدام القلم الجاف وقلم الحبر منعًا باتًا. ويجب تظليل الأجوبة في ورقة الإجابة؛ فالإجابات التي تُظلل على كتيب الاسئلة غير مقبولة

9 تأكدوا فور أخذكم كتيب الاسئلة من أن صفحاته كاملة ولا يوجد فيها خطأ طباعي. وإذا كانت صفحات كتيب الاسئلة ناقصة أو بها خطأ طباعي راجعوا فورا رئيس القاعة ، كما يجب عليكم التأكد من تطابق نوع كتيب الأسئلة الموجودة في قمة كل صفحة من صفحات كتيب الأسئلة مع نوع كتيب الأسئلة الموضح على الغلاف الأمامي للكتيب. وفي حال اختلافهما اطلبوا من رئيس القاعة كتيب أسئلة جديد. وإذا لاحظتم لاحقاً أن نوع الكتيب مختلف راجعوا رئيس القاعة؛ لإعطائكم كتيب أسئلة ليست فيه أخطاء من نفس النوع الذي أجبتم عليه فيما مضى، ولا تنسوا الإشارة على ورقة الإجابة إلى نوع كتيب الأسئلة الذي سيعطى لكم. وإذا لم توضع الاشارة هذه لن يتم تقييم امتحانكم وسيعتبر لاغياً

10 يمكنكم استخدام الأماكن الفارغة في صفحات كتيب الأسئلة كمسودة

11 ممنوع تدخين السجائر أو السيجار أو الغليون وما شابهه أثناء الامتحان لكل الأشخاص بما فيهم مراقبوا الامتحان

12 يُمنع منعاً باتاً كتابة الأسئلة وأجوبتها هذه على ورقةٍ مستقلةٍ وإخراجها من قاعة الامتحان

13 لا تنسوا تسليم كتيب الأسئلة وورقة الإجابة إلى موظفي القاعة قبل مغادرتها

SINAVDA UYULACAK KURALLAR

1. Cep telefonu ile sınava girmek kesinlikle yasaktır. Çağrı cihazı, telsiz, vb. haberleşme araçları ile cep bilgisayarı, saat fonksiyonu dışında fonksiyonu bulunan saat vb. her türlü bilgisayar özelliği bulunan cihazlarla ve ayrıca silah vb. teçhizatla, müsvedde kâğıdı, defter, kitap, sözlük, sözlük işlevi olan elektronik aygıt, hesap makinesi, hesap cetveli, pergel, açıölçer, cetvel vb. araçlarla da sınava girmek yasaktır. Bu araçlarla sınava girmiş adayların yabancı uyruk numaraları mutlaka Salon Sınav Tutanağına yazılacak, bu adayların sınavları geçersiz sayılacaktır.

2. Sinav süresi 120 dakikadır.

3. Sınav sırasında herhangi bir nedenle dışarı çıkmak yasaktır. Sınavın başlamasını izleyen ilk 30 dakika ve sınav süresinin son 15 dakikası içinde, sınavlarını tamamlasalar bile hiçbir adayın salondan çıkmasına izin verilmeyecektir. Sınavın başlamasını izleyen ilk 30 dakikadan sonra hiçbir aday sınava alınmaz..

4. Sınav evrakını teslim ederek salonu terk eden aday, her ne sebeple olursa olsun tekrar sınava alınmayacaktır.

5. Sınav süresince görevlilerle konuşmak ve onlara soru sormak yasaktır. Aynı şekilde görevlilerin de adaylarla yakından ve alçak sesle konuşmaları; ayrıca, adayların birbirinden kalem, silgi vb. şeyleri istemeleri kesinlikle yasaktır.

6. Sınav sırasında görevlilerin her türlü uyarılarına uymak zorundasınız. Gerektiğinde görevliler oturduğunuz yerleri de değiştirebilir. Sınavınızın geçerli sayılması, her şeyden önce sınav kurallarına uymanıza bağlıdır. Kurallara aykırı davranışta bulunur ve yapılacak uyarılara uymazsanız kimliğiniz tutanağa yazılacak ve sınavınız geçersiz sayılacaktır.

7. Sınav sırasında kopya çeken, çekmeye girişen, kopya veren, kopya çekilmesine yardım edenlerin kimlik bilgileri Salon Sınav Tutanağına yazılacak ve bu adayların sınavları geçersiz sayılacaktır. Görevliler kopya çekmeye veya vermeye çalışanları uyarmak zorunda değildir. Sorumluluk size aittir. Sınav sırasında cevap kâğıdınızı başkaları tarafından görülmeyecek şekilde tutmanız sizin için son derece önemlidir.

8. Cevap kâğıdında ilgili alanları doldurmanız gerekmektedir. Cevap kâğıdına yazılacak her türlü yazıda ve yapılacak bütün işaretlemelerde kurşun kalem kullanılacaktır. Tükenmez kalem ve dolma kalem kesinlikle kullanılmayacaktır. Cevapların cevap kâğıdına işaretlenmiş olması gerekir. Soru kitapçığına işaretlenen cevaplar geçerli değildir.

9. Soru kitapçığınızı alır almaz, sayfaların eksik olup olmadığını, kitapçıkta basım hatalarının bulunup bulunmadığını kontrol ediniz. Soru kitapçığınızın sayfası eksik veya basımı hatalı ise değiştirilmesi için derhâl Salon Başkanına başvurunuz. Soru kitapçığında her sayfanın tepesinde basılı bulunan soru kitapçığı türünün, kitapçığın ön kapağında basılı soru kitapçığı türüyle aynı olup olmadığını kontrol ediniz. Farklı olması durumunda Salon Başkanından yeni bir soru kitapçığı isteyiniz. Soru kitapçığınızın türünün değişik olduğunu daha sonra fark ederseniz, size o zamana kadar cevaplama yaptığınız türden, hatasız bir soru kitapçığı verilmesi için Salon Başkanına başvurunuz. Cevap kâğıdınıza, size verilecek olan soru kitapçığının türünü işaretlemeyi unutmayınız. Bu işaret konmamışsa sınavınızın değerlendirilmesine olanak bulunmadığından sınavınız geçersiz sayılacaktır.

10. Soru kitapçığının sayfalarındaki boş yerleri müsvedde için kullanabilirsiniz.

11. Sınav sırasında, görevliler dahil, kimse sigara, pipo, puro vb. şeyleri içmeyecektir.

12. Soruları ve bu sorulara verdiğiniz cevapları ayrı bir kâğıda yazıp bu kâğıdı dışarı çıkarmanız kesinlikle yasaktır.

13. Sınav salonundan ayrılmadan önce, soru kitapçığınızı, cevap kâğıdınızı salon görevlilerine teslim etmeyi unutmayınız.