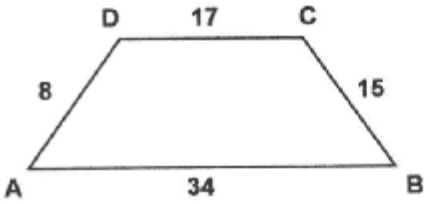
A

1 **What is the coefficient of x^3 in the binomial expansion of $(1-2x)^7$?**

A) -230
B) 120
C) -140
D) 250
E) -280

2



ABCD is a trapezium where AB//DC. Find the area of ABCD.

A) 200
B) 190
C) 160
D) 170
E) 180

3 **Solve the equation** $2x+\frac{x+7}{3}=\frac{4x-9}{5}$

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

4 $\vec{A}=2\vec{e_1}+x\vec{e_2}$ and $\vec{B}=-\vec{e_1}+5\vec{e_2}$ **are perpendicular to each other, find x.**

A) -5/2
B) 0
C) 2/5
D) -2/5
E) 1/5

A

5 When a 5-digit number 6A2AA is divided by 9 the remainder is 2. Find the sum of the possible values of A.

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

6 Solve $\log_6(x-2)+1\log_6(2x-3)=1$

A) 7/6
B) 3/2
C) 7/2
D) 0
E) 9/5

7 **Find the remainder when the polynomial** $x^3+5x^2-17x-21$ **is divided by (x+1).**

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

8 Find the volume of the solid generated by revolving about the x-axis the region bounded by $y=x^2+1$ and $y=x+3$

A) $\frac{12\pi}{5}$
B) $\frac{18\pi}{3}$
C) $\frac{117\pi}{5}$
D) $\frac{16\pi}{7}$
E) $\frac{83\pi}{5}$

9 If $\log 2 = 0.301$, find $\log 500$

A) 0.603
B) 0.966
C) 1.908
D) 2.699
E) 3.001

10 **A curve is defined parametrically by the equations**

$x = t^3 - \frac{3}{t}$, $y = 2t^{\frac{3}{2}}$ **(t>0).**

Find the equation of the normal to the curve at the point where t=1.

A) $x + y + 2 = 0$
B) $3x + 2y - 2 = 0$
C) $2x + y + 2 = 0$
D) $x - y = 0$
E) $x - y = 2$

11 If $\log_3 8! = a$ given, find $\log_3 9!$ İn terms of a

A) $a + 2$
B) $a + 3$
C) $a + 1$
D) $a + 9$
E) $9a$

12

$1^3 + 2^3 + 3^3 + 4^3 + \ldots\ldots + 15^3 = ?$

A) 18000
B) 14400
C) 164000
D) 12100
E) 22100

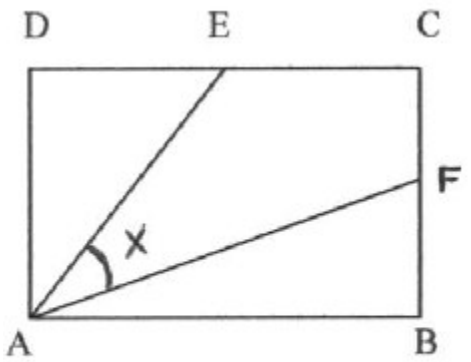
13 What is the constant term in the expansion of $(x^3 + 1/x)^8$

A) 72
B) 28
C) 56
D) 14
E) 112

14 **Solve $\sqrt{3}\cot\alpha = 1$, where $0^0 \leq \alpha \leq 360^0$.**

A) $\{60^v, 90^v\}$
B) $\{30^v, -45^v\}$
C) $\{-45^v, 300^v\}$
D) $\{60^v, 240^v\}$
E) $\{-60^v, 45^v\}$

15



ABCD is a spuare and E and F are the midpoints of DC and CB respectively. Find cotx

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

16 (x-2).P(x)= $4x^4 - mx + 12$ is given.
Find the remainder when p(x) is divided by x-2.

A) 2
B) 4
C) 6
D) 8
E) 3

17 **In how many different ways can a committee of 5 be chosen from 7 men and 6 women if at least 3 men will be in the committee.**

A) 165
B) 756
C) 420
D) 1056
E) 210

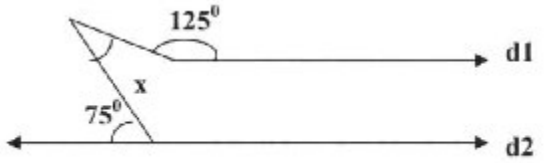
18 **Given that** $\sum_{r=n+3}^{2n} r = 312$ **, find the value of n.**

A) 15
B) 14
C) 25
D) 12
E) 26

19 f(x)=2x – 3 and (gof)(x)=8x-1 are given.
Find g(3)=?

A) 23
B) 24
C) 27
D) 21
E) 32

20



In the diagram d1//d2. Find the value of angle x.

A) 20°
B) 15°
C) 45°
D) 30°
E) 10°

21 Given that f(x)=In(3x-1).
Find $f^{-1}(0) + (f^{-1})^1(0)$=?

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

22 If polynomial $P(x)= x^3 + 4x^4 + ax + b$ can exactly be divided by $(x-2)^2$ find $a + b = ?$

A) 8
B) 6
C) 10
D) 4
E) 12

23 If the number 40.5^x has 40 positive integer divisors, find x.

A) 6
B) 4
C) 12
D) 8
E) 16

24 If 20% of the number $2^{x+4} + 2^{x+4}$ is 64
Find x

A) 1
B) 2
C) 3
D) 4
E) 5

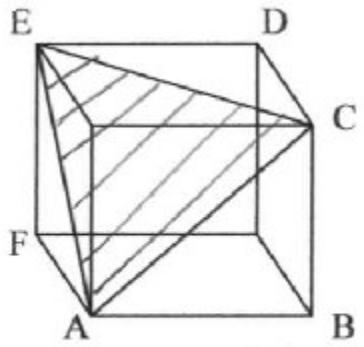
25 Simplify $\frac{a^4-b^8}{a^2+b^4} : \left(\frac{a}{b}+b\right)+b^3$

A) a
B) b
C) ab^2
D) a^2b
E) ab

26 $\sum_{n=1}^{\infty} \left(\frac{2}{5}\right)^{n+1} = ?$

A) $\frac{3}{7}$
B) $\frac{4}{15}$
C) $\frac{2}{11}$
D) $\frac{4}{5}$
E) $\frac{8}{9}$

27



ABCDEF is a cube and its volume is $16\sqrt{2}$, find the area of ACE

A) $6\sqrt{3}$
B) $4\sqrt{3}$
C) $4\sqrt{2}$
D) 6
E) $8\sqrt{3}$

28 a_n is a geometric sequence, if the common ratio r=3 and the sum of the first 5 terms s_5=-847, find a_6

A) -650
B) -1701
C) -960
D) -735
E) -2005

29 $x \Delta y = 2x+y - 2.(y \Delta x)$ is given.

Find $(2 \Delta 3) + (3 \Delta 2) = ?$

A) -5
B) -3
C) 3
D) 5
E) 10

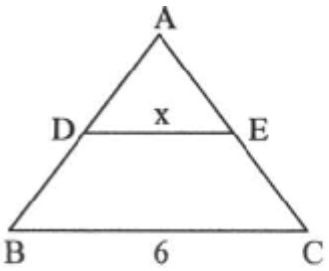
30 The first four terms of an AP are 5, 11, 17 and 23. Find the sum of the first 30 terms.

A) 2760
B) 1457
C) 7664
D) 2140
E) 1865

31 $52^{-61} = x \pmod 7$, find the least possible natural number for x.

A) 1
B) 4
C) 2
D) 3
E) 5

32



DE//BC, $|BC|$=6cm, $\frac{AreaADE}{AreaBCED} = 3$,

Find $|DE|$=x=?

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

A

33 If $\cos x = \frac{1}{8}$ and x lies in fourth quadrant.

Find $\tan \frac{x}{2}$=?

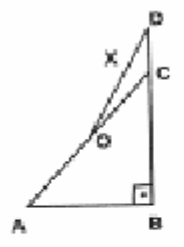
A) $-\frac{\sqrt{17}}{7}$
B) $2\sqrt{3}$
C) $\frac{-\sqrt{5}}{7}$
D) $\frac{\sqrt{3}}{8}$
E) $-\frac{\sqrt{7}}{3}$

34 P(n+1, n-1)=30. P(n-2, n-3) is given, find n.

A) 3
B) 8
C) 5
D) 4
E) 10

A

35



ABC is an isosceles right-angled triangle. $|BD|=|AC|=2$ cm, $|OA|=|OC|$, $|OD|=x$
Find x

A) $\sqrt{4-\sqrt{2}}$
B) $\sqrt{4-2\sqrt{2}}$
C) $\sqrt{5-\sqrt{3}}$
D) $\sqrt{3-\sqrt{2}}$
E) $\sqrt{5-2\sqrt{2}}$

36 $P(x-2)=(x^4+1).(Q(x-1)-x-1$ is given. When $P(x)$ is divided by $(x-3)$ the remainder is 20. Find the remainder when $Q(x)$ is divided by $(x-4)$.

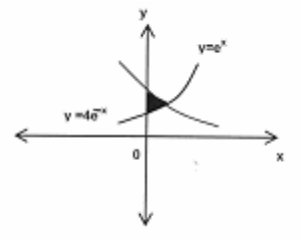
A) 3
B) 2
C) 0
D) 1
E) 4

37 The arithmetic mean of two numbers A and B is 13/2 and the harmonic mean of A and B is 72/13. Find the geometric mean of these numbers?

A) 24/5
B) 23/5
C) 23/6
D) 6
E) 5

A

38



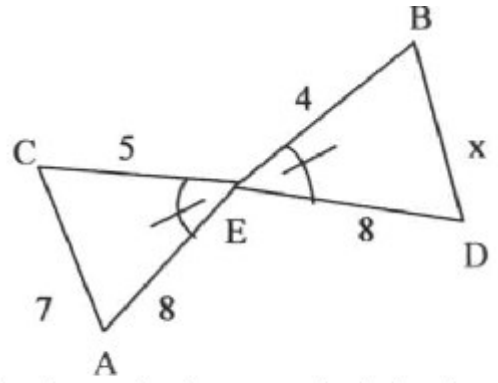
Find, the area of theshaded region bounded by the curves $y=e^x$, $y=4e^{-x}$ and y-axis.

A) 3
B) 1
C) 1n2
D) 2
E) 1n3

39 Given the points A(-7,-5) and B(5,-3), if α is the angle which AB makes with the horizontal then find $\tan\alpha$.

A) 0
B) 1/5
C) 2/3
D) 2
E) 1/6

40



$|AC|$=7cm, $|AE|$=8cm = $|ED|$, $|CE|$= 5cm and $|BE|$=4cm. Find $|BD|$=x

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

41 Two dice are to be thrown. Find the prob of scoring the sum of the numbers appeared to be a multiple of 5.

A) $\frac{7}{36}$
B) $\frac{1}{6}$
C) $\frac{1}{3}$
D) $\frac{1}{9}$
E) $\frac{2}{3}$

42 A rectangular box with a square base is to be made from sheet metal to have a volume of 216cm^2. Find the least area of sheet metal needed.

A) 126
B) 95
C) 310
D) 216
E) 405

43 Solve x $|x-2|=3$.

A) {3}
B) {-2 }
C) {-1 }
D) {4}
E) {2 }

44 $x^4-3x+2=0$ is given.
Find the value of x^3+8/x^3=?

A) 9
B) 21
C) 13
D) 11
E) 27

45 A die is thrown 5 times. Find the prob.of getting 6 in 4 throws.

A) $\frac{25}{6^3}$
B) $\frac{25}{6^2}$
C) $\frac{5}{6}$
D) $\frac{25}{6^4}$
E) $\frac{25}{6^5}$

46 **Solve the equation** $|2x-3|=2$.

A) {-1/2, 3 }
B) {1/3, -1/4 }
C) {4, -5/2 }
D) {1/2, 5/2 }
E) {-1, 1 }

47 **Find the coordinates of the point P, on the curve y= x (x-1)^3, where the gradient is 7.**

A) (3,-4)
B) (2,2)
C) (3,3)
D) (-2,3)
E) (1,1)

48 **A rectangular prism whose dimensions are 12, 16 and 20 is divided into cube sections at least how many cubes can be formed if the length of one side of the cube is as long as possible?**

A) 40
B) 50
C) 60
D) 70
E) 80

49 How many digits are there of the number 320.5^6

A) 6
B) 5
C) 4
D) 8
E) 7

50 **Find the smallest positive integer which satisfies the inequality**

$$3(x-1)+2(2x-1)>5x$$

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

51 **Solve the equation**

$$\frac{2x+1}{x+5}=\frac{3x-1}{x+7}$$

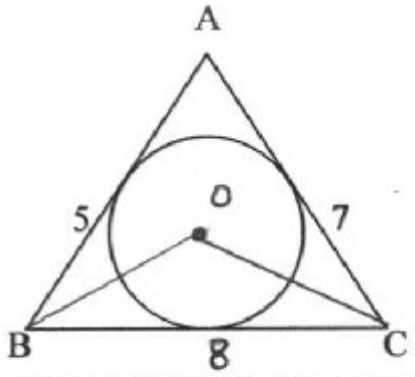
A) {-4, 3 }
B) {-3, 4 }
C) {3, -4 }
D) {4, -3 }
E) {-6, 4 }

52 $x^2-(m+1)x+2m-3=0$ where $0<x_1<x_2$ and x_1, x_2 are the roots of the given equation. **Find m**

A) $-1<m<3/2$
B) $m>3/2$
C) $m<-1$ OR $m>3/2$
D) $-1<m<-1/4$
E) $m<3/2$

A

53



ABC is tangent to the given circle with center at o.
$|AB| = 5\text{cm},\ |AC| = 7\text{cm},\ |BC| = 8\text{cm}.$
Find the area of BOC

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

54 Given that $3/\cos x = 4/\sin x$. Find the positive value of cosx.

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

A

55 If $y = \frac{e^x - 1}{2e^x}$ find x in terms of y

A) 21ny
B) 2+1ny
C) 1+1n2y
D) -1n(1-2y)
E) 1n(1+y)

56 $A = \{x \in z, 20 < x < 120\}$ is given. How many elements of A can exactly be divided by either 3 or 5?

A) 30
B) 31
C) 33
D) 32
E) 46

TEST BİTTİ
CEVAPLARINIZI KONTROL EDİNİZ