Started on	Friday, 8 March 2024, 9:43 AM
State	Finished
Completed on	Friday, 8 March 2024, 9:43 AM
Time taken	9 secs

Question 1

Not answered

v1 (latest)

How many terms are there in the sequence 4, 8, 12, ... 2020?

Select one:

- a. 505
- b. 504
- c. 510
- d. 503
- e. 700

Your answer is incorrect.

The correct answer is: 505

Question 2

Not answered

v1 (latest)

The sum of two 2-digit numbers is a third 2-digit number. What is the maximum value of the product of these three numbers?

Select one:

- a. 356,000
- b. 238,392
- c. 970,299
- d. 239,580
- e. 242,550

Your answer is incorrect.

The correct answer is: 242,550

Question 3

Not answered

v1 (latest)

(U_n) is a sequence such that $U_0 = 2$ and $U_{n+1} = (U_n - 3)^2$. What is the value of U_2?

Select one:

- ○ a. -4
- ○ b. 4
- ○ c. 2
- ○ d. 0
- ○ e. 6

Your answer is incorrect.

The correct answer is: 4

Question 4

Not answered

v1 (latest)

The registration plate of a car in a country begins with two letters, from the 26 letters in the English Alphabet, followed by four even digits. Neither the letters nor the digits can be repeated. In a certain city in this country, the first letter of every registration plate must be "A", while the last digits cannot be zero. How many possible different registration plates can exist in this city?

Select one:

- ○ a. 1,500
- ○ b. 2,400
- ○ c. 2,496
- ○ d. 13,000
- ○ e. 113,400

Your answer is incorrect.

The correct answer is: 2,400

Question 5

Not answered

(v1 (latest))

Consider the two matrices $A_{4\times6}$ and $B_{2\times m}$. What should be m so that B • A defined?

Select one:

○ a.   2

○ b.   4

○ c.   6

○ d.   5

○ e.   4×2

Your answer is incorrect.

The correct answer is: 4

Question 6

Not answered

(v1 (latest))

On a science exam of 40 multiple choice questions, Elvis got 80% of the 15 biology questions correct, 60% of the 15 chemistry questions wrong and 20% of the 10 physics questions wrong. Knowing that Elvis answered all the questions, what percentage of all the questions did he get wrong?

Select one:

○ a.   35%

○ b.   65%

○ c.   50%

○ d.   72.5%

○ e.   54%

Your answer is incorrect.

The correct answer is: 35%

Question 7

Not answered

v1 (latest)

What is the value of x in the equality $2ix(i - 1) = (i - 1)^2 - 2$ knowing that $i = \sqrt{-1}$?

Select one:

- a. -2

- b. -1

- c. 0

- d. 2

- e. 1

Your answer is incorrect.

The correct answer is: 1

Question 8

Not answered

v1 (latest)

If $\left| x - 2 \right| < 4$, then $\left| x - 3 \right|$ is less than

Select one:

- a. 4

- b. 2

- c. 3

- d. 5

- e. 0

Your answer is incorrect.

The correct answer is: 5

Question 9

Not answered

v1 (latest)

A bicycle store finds that N, the number of bikes sold, is related to d, the number of dollars spent on advertising by the relation N = 51 + 10 ln $(\frac{d}{10} + 2)$. If the average profit is $35 per bike, is it worthwhile to spend $1000 on advertising?

Select one:

- a. No, because the profit will be less than the amount spent on advertising.

- b. No, because the profit will be $97.

- c. Yes, because advertisement is important.

- d. Yes, because the profit is bigger than $1000.

- e. No, because the advertisement amount is big with respect to the product being advertised.

Your answer is incorrect.

The correct answer is: Yes, because the profit is bigger than $1000.

Question 10

Not answered

v1 (latest)

Using the two tables below, what is $(g \circ f)(-2)$?

x	f(x)
-2	-1
4	-2
5	4

x	g(x)
5	4
-1	2
3	6

Select one:

- a. 3

- b. 5

- c. -2

- d. -1

- e. 2

Your answer is incorrect.

The correct answer is: 2

Question 11

Not answered

v1 (latest)

The value, in US dollars, of a car is given by $V = \beta e^{-\alpha t}$ where t represents the age of the car in years and β and α are real numbers. The initial price of the car was \$8000, and its price after one year becomes \$6000. Then the value of α is:

A. $\ln\left(\dfrac{1}{4}\right)$

B. $\ln\left(\dfrac{1}{3}\right)$

C. $\ln\left(\dfrac{2}{3}\right)$

D. $\ln\left(\dfrac{3}{4}\right)$

E. $\ln\left(\dfrac{4}{3}\right)$

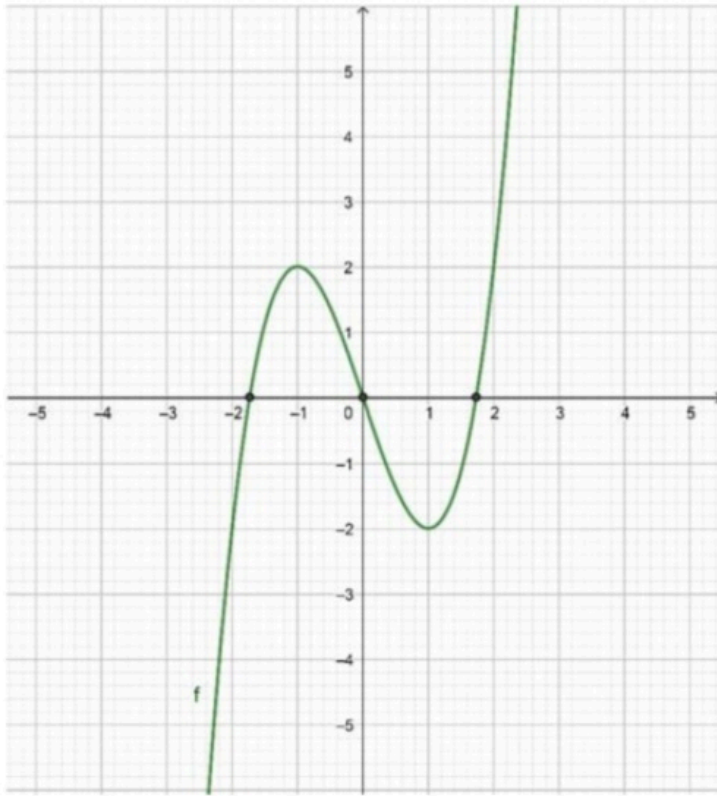Select one:

○ a. A

○ b. B

○ c. C

○ d. D

○ e. E

Your answer is incorrect.

The correct answer is: E

Question 12

Not answered

(v1 (latest))

The figure above represents a function f that cuts the x-axis at three points of abscissas $-\sqrt{3}, 0$ and $\sqrt{3}$.

Consider the following intervals: $I = \left]-2, -\sqrt{3}\right[$, $K = \left]-1, 0\right[$, $L = \left]0, 1\right[$, $M = \left]1, \sqrt{3}\right[$ and $N = \left]\sqrt{3}, 2\right[$.

In what interval is the function f considered to be positive and decreasing function?

A. I
B. K
C. L
D. M
E. N

Select one:

○ a. A

○ b. B

○ c. C

○ d. D

○ e. E

Your answer is incorrect.

The correct answer is: B

Question 13

Not answered

v1 (latest)

Consider $P(x) = ax^2 + bx + c$ $(a \neq 0)$, a polynomial of second degree in which $P(0) = 1$

If $P(x + 1) - P(x) = 4x$, what are the values of a, b and c?

Select one:

○ a. a = 2, b = 2, c = 0

○ b. a = 2, b = 2, c = 1

○ c. a = 1, b = 2, c = 1

○ d. a = —2, b = —2, c = 1

○ e. a = 2, b = —2, c = 1

Your answer is incorrect.

The correct answer is: a = 2, b = —2, c = 1

Question 14

Not answered

v1 (latest)

If m is a real parameter, what is the number of the real roots of the equation $x(x^2 + 1)(mx^2 - x - 2m) = 0$?

Select one:

○ a. 1

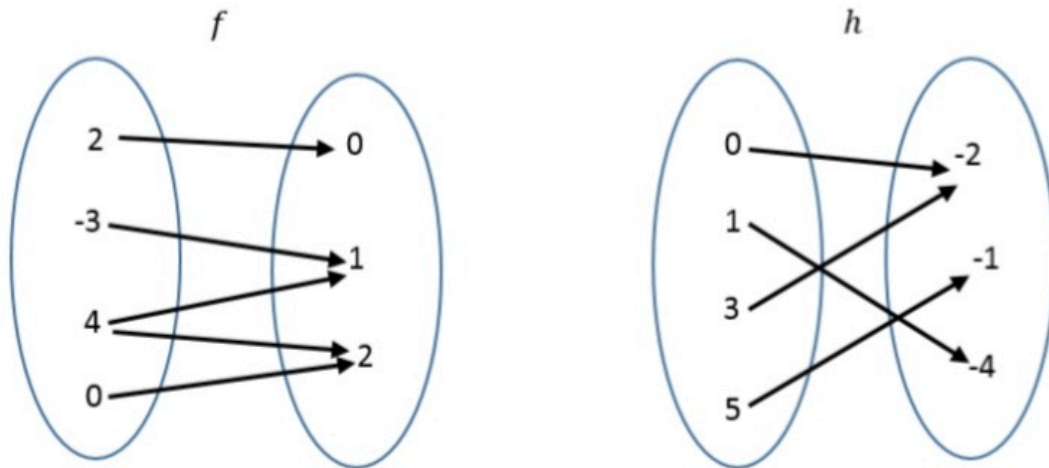○ b. 2

○ c. 3

○ d. 0

○ e. 5

Your answer is incorrect.

The correct answer is: 3

Question 15

Not answered

v1 (latest)

f h

Which of the two relations above is a function and why?

A. f because input 4 has two images
B. f because each input has exactly one output
C. h because input -2 has two pre-images
D. f or h because each relation is a function
E. h because each input has only one image

Select one:

a. A

b. B

c. C

d. D

e. E

Your answer is incorrect.

The correct answer is: E

Question 16

Not answered

v1 (latest)

Consider the functions below:

$$f(x) = 2x^3 - 4x + 1$$
$$g(x) = 3x^{0.5} + 3x^{-2} + 3$$
$$h(x) = -\sqrt{3}x^2 + 3x$$
$$k(x) = \frac{1}{3}x^2 + \frac{2}{x}$$

Which of these functions is a polynomial function?

A. f and g
B. h and g
C. f and h
D. f, h and g
E. f, g, h and k

Select one:

- a. A
- b. B
- c. C
- d. D
- e. E

Your answer is incorrect.

The correct answer is: C

Question 17

Not answered

v1 (latest)

In the xy −plane the function f defined by $f(x) = x^3 + 4x − 5$ admits a graph (C). A computer program generated 5 graphs of which one is correct. The graphs are characterized by:

Graph 1	It admits 3 vertices.
Graph 2	It admits 2 maxima and 1 minimum.
Graph 3	It is strictly decreasing.
Graph 4	It is strictly increasing.
Graph 5	It is always positive.

Which graph is correct?

A. Graph 1
B. Graph 2
C. Graph 3
D. Graph 4
E. Graph 5

Select one:

○ a. A

○ b. B

○ c. C

○ d. D

○ e. E

Your answer is incorrect.

The correct answer is: D

Question 18

Not answered

v1 (latest)

If $f(x) = \sqrt[3]{x^3 + 3} + 3$ and $f^{-1}(x) = \sqrt[3]{-3}$, what is the value of x ?

Select one:

○ a.   -3

○ b.   -2

○ c.   0

○ d.   3

○ e.   2

Your answer is incorrect.

The correct answer is: 3

Question 19

Not answered

v1 (latest)

If $x + \frac{1}{x} = 2$, what is the value of $x^2 + \frac{1}{x^2}$?

Select one:

○ a.   4

○ b.   8

○ c.   2

○ d.   0.5

○ e.   16

Your answer is incorrect.

The correct answer is: 2

Question 20

Not answered

v1 (latest)

If $\log_2 16 = x+y$ and $\log_x 4 = 2$, then what is $\log_2 y$?

Select one:

a. 0

b. 1

c. 2

d. 3

e. 4

Your answer is incorrect.

The correct answer is: 1

Question 21

Not answered

v1 (latest)

. What is the domain of definition of $arcsin(3 - 4x)$?

A. $\frac{-1}{2} \leq x \leq \frac{1}{2}$

B. $\frac{-1}{2} \leq x \leq 1$

C. $\frac{1}{2} \leq x \leq 1$

D. $-1 \leq x \leq \frac{-1}{2}$

E. $-1 \leq x \leq 1$

Select one:

a. A

b. B

c. C

d. D

e. E

Your answer is incorrect.

The correct answer is: C

Question 22

Not answered

v1 (latest)

What is the parity and periodicity of function f defined by f(x)= 2 sin $(\frac{x}{2})$?

Select one:

- a.   even and period 4π
- b.   Odd and period 4π
- c.   even and period π
- d.   Odd and period π
- e.   Odd and period 2π

Your answer is incorrect.

The correct answer is: Odd and period 4π

Question 23

Not answered

v1 (latest)

. $ln(x^2 - 2x + 2) > 0$ is verified in:

A. $]-\infty, +\infty[$
B. $]0, +\infty[$
C. $]0,1]$
D. $]-\infty, \frac{-1}{2}[\cup]0, +\infty[$
E. $]-\infty, 1[\cup]1, +\infty[$

Select one:

- a.   A
- b.   B
- c.   C
- d.   D
- e.   E

Your answer is incorrect.

The correct answer is: E

Question 24

Not answered

v1 (latest)

$$f(x) = \begin{array}{ll} -8x - m & for\ x \leq 2 \\ 10x - 3 & for\ x > 2 \end{array}$$

For what value of m, if any, is the function f above continuous at $x = 2$?

A. 33
B. 17
C. 23
D. −33
E. Doesn't exist

Select one:

○ a. A

○ b. B

○ c. C

○ d. D

○ e. E

Your answer is incorrect.

The correct answer is: D

Question 25

Not answered

v1 (latest)

If $x^2 = -2y-5$ and $z = -8y^3$, what is x in terms of z ?

Select one:

○ a. X=$\sqrt[3]{z}$-5

○ b. X=$\pm\sqrt{\sqrt[3]{z} - 5}$

○ c. X=$\pm(\sqrt[3]{z} - 5)$

○ d. X=$\pm\sqrt[6]{z} - \sqrt{5}$

○ e. X=$(\sqrt[3]{z} - 5)^2$

Your answer is incorrect.

The correct answer is: X=$\pm\sqrt{\sqrt[3]{z} - 5}$

Question 26

Not answered

(v1 (latest))
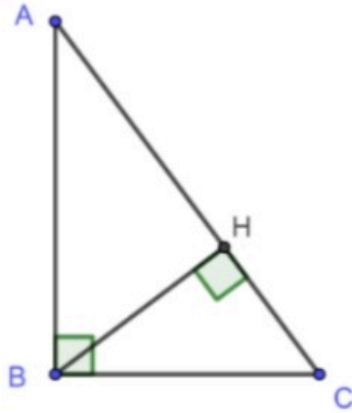
. Triangle ABC is right angled at B such that $B\hat{A}C = \theta$ and H is the foot of the altitude drawn from B to $[AC]$. If $AC = 4$ and $\theta = 15°$ then $BH =$

(The figure is not drawn to scale)

A. $\dfrac{1}{3}$

B. $\dfrac{1}{2}$

C. 1

D. $\dfrac{2}{3}$

E. 2

Select one:

○ a.   A

○ b.   B

○ c.   C

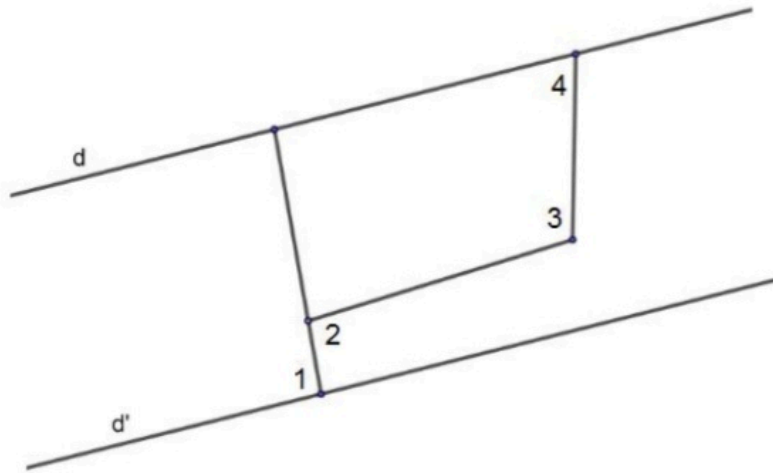○ d.   D

○ e.   E

Your answer is incorrect.

The correct answer is: C

Question 27

Not answered

v1 (latest)

In the figure above, d and d′ are parallel lines, $\angle 1 = 93°$, $\angle 3 = 107°$ and $\angle 2 = 97°$. What is the measure of angle 4? (The figure is not drawn to scale)

A. 77°
B. 63°
C. 73°
D. 83°
E. 67°

Select one:

○ a. A

○ b. B

○ c. C

○ d. D

○ e. E

Your answer is incorrect.

The correct answer is: A

Question 28

Not answered

v1 (latest)

L. 37
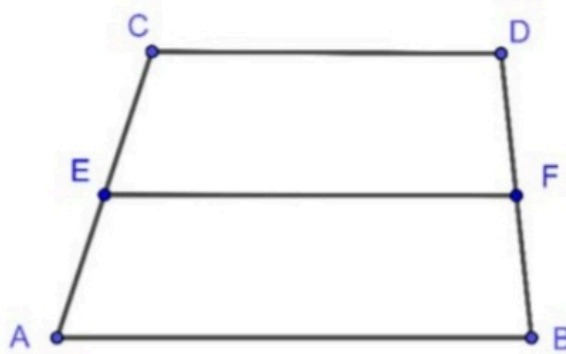
In the trapezoid above, $CD = y^2 + 1$, $AB = 3y - 1$ and $EF = 2$. If E and F are the midpoints of $\overline{AC}$ and $\overline{BD}$, what is the value of y? (The figure is not drawn to scale)

A. -4
B. 1
C. 4
D. 1 or -4
E. 1 or 4

Select one:

○ a. A

○ b. B

○ c. C

○ d. D

○ e. E

Your answer is incorrect.

The correct answer is: B

Question 29

Not answered

v1 (latest)
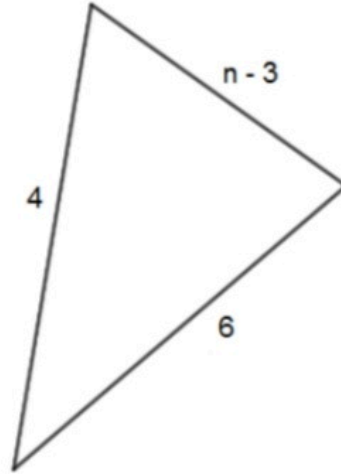
Which of the following numbers 2, 4, 8, 10 and 14 cannot be a value of n in the triangle above? (The figure is not drawn to scale)

A. 14
B. 2 and 4
C. 2 and 14
D. 2, 4 and 14
E. 8, 10 and 14

Select one:

○ a. A

○ b. B

○ c. C

○ d. D

○ e. E

Your answer is incorrect.

The correct answer is: D

Question 30

Not answered

v1 (latest)

In the xy-plane, what quadrant(s) could point A lie in, if its x-coordinate and y-coordinate have opposite signs ?

Select one:

- a. Quadrant I
- b. Quadrant II
- c. Quadrant II and III
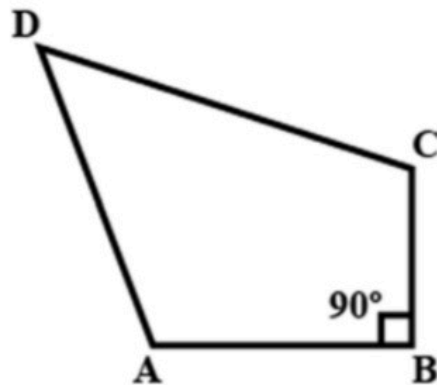- d. Quadrant II and IV
- e. Quadrant III and IV

Your answer is incorrect.

The correct answer is: Quadrant II and IV

Question 31

Not answered

v1 (latest)

. In the quadrilateral ABCD above, $\angle C - \angle D = 60°$ and $\angle A - \angle C - \angle D = 10°$. Find $\angle A$, $\angle C$ and $\angle D$. (The figure is not drawn to scale)

A. $\angle A = 140°$; $\angle C = 95°$; $\angle D = 35°$
B. $\angle A = 120°$; $\angle C = 85°$; $\angle D = 25°$
C. $\angle A = 95°$; $\angle C = 140°$; $\angle D = 80°$
D. $\angle A = 120°$; $\angle C = 115°$; $\angle D = 35°$
E. $\angle A = 140°$; $\angle C = 35°$; $\angle D = 95°$

Select one:
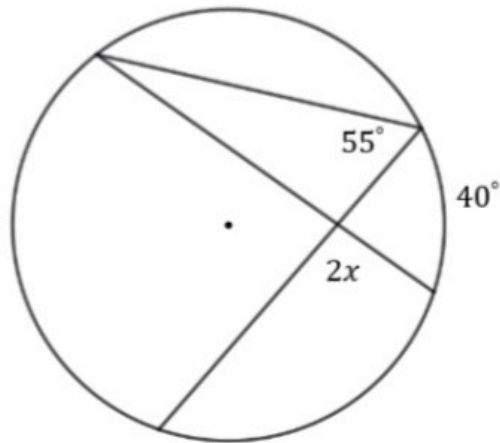
○ a.   A

○ b.   B

○ c.   C

○ d.   D

○ e.   E

Your answer is incorrect.

The correct answer is: A

Question 32

Not answered

v1 (latest)

. In the figure above, what is the value of $\frac{x}{2}$?

A. $50°$
B. $66.25°$
C. $105°$
D. $52.5°$
E. $26.25°$

Select one:
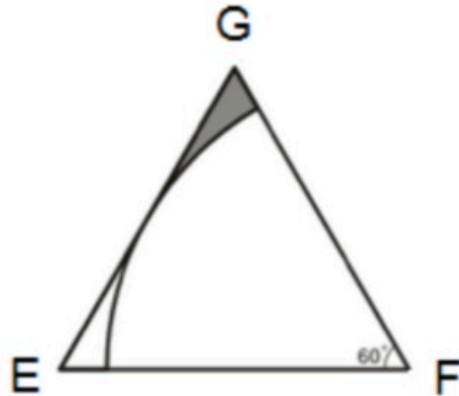
○ a. A

○ b. B

○ c. C

○ d. D

○ e. E

Your answer is incorrect.

The correct answer is: E

Question 33

Not answered

v1 (latest)

A circular region centered at F is inscribed in equilateral triangle EFG as shown above. If the area of the triangle EFG is $12\sqrt{3}$, what is the approximate area of the shaded region?

A. 0.97
B. 18.85
C. 6.93
D. 1.94
E. 2.17

Select one:

○ a. A

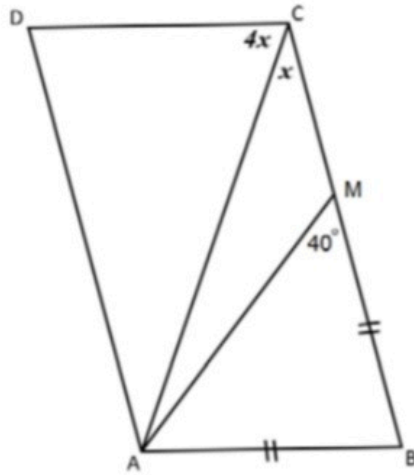○ b. B

○ c. C

○ d. D

○ e. E

Your answer is incorrect.

The correct answer is: A

Question 34

Not answered

v1 (latest)

In the figure above, M is a point on side BC of parallelogram $ABCD$. What is the measure of $\angle CAM$? (The figure is not drawn to scale)

A. $16°$

B. $24°$

C. $64°$

D. $104°$

E. $20°$

Select one:

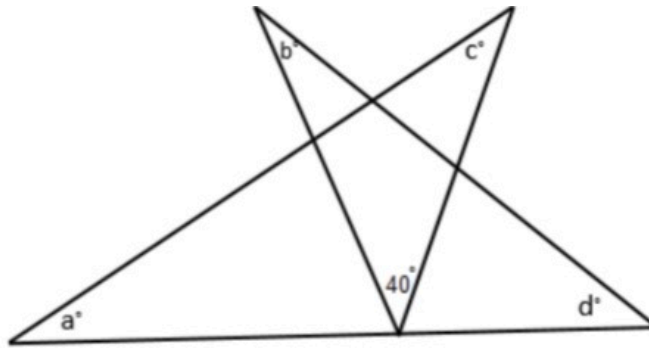   a. A

   b. B

   c. C

   d. D

   e. E

Your answer is incorrect.

The correct answer is: B

Question 35

Not answered

v1 (latest)

What is the measure of a + b + c + d in the figure shown above? (The figure is not drawn to scale)

A. $140°$
B. $120°$
C. $160°$
D. $320°$
E. Can't be calculated

Select one:

   a.   A

   b.   B

   c.   C

   d.   D

   e.   E

Your answer is incorrect.

The correct answer is: A

Question 36

Not answered

(v1 (latest))

Consider the two lines D and L of respective equations 2x – y – 1 = 0 and mx + (m – 1)y = 0 where m is real number. For what value of m, line D is parallel to line L?

Select one:

○ a.   -1

○ b.   2

○ c. $\frac{3}{2}$

○ d. $\frac{2}{3}$

○ e.   -2

Your answer is incorrect.

The correct answer is: $\frac{2}{3}$

Question 37

Not answered

(v1 (latest))

In the xy – plane, (C) is a circle of center A(1, 0) and radius 2. (d) is the line of equation x + m = 0. For what values of m does the line (d) cut circle (C) in two distinct points?
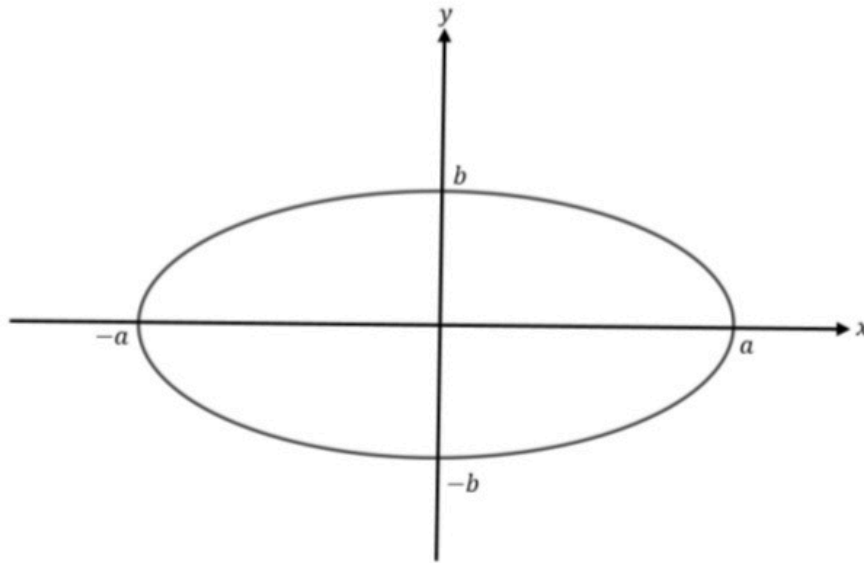
Select one:

○ a.   m<2

○ b.   -1<m<3

○ c.   -3<m<1

○ d. $-2 \leq m \leq 2$

○ e.   m>3

Your answer is incorrect.

The correct answer is: -3<m<1

Question 38

Not answered

v1 (latest)

Knowing that the area of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ is $A = \pi ab$, what is the equation of the ellipse if $a + b = 12$ and $A = 35\pi$?

A. $\frac{x^2}{25} + \frac{y^2}{49} = 1$

B. $\frac{x^2}{8^2} + \frac{y^2}{4^2} = 1$

C. $\frac{x^2}{7^2} + \frac{y^2}{5^2} = 1$

D. $\frac{x^2}{35^2} + \frac{y^2}{12^2} = 1$

E. $\frac{x^2}{7^2} - \frac{y^2}{5^2} = 1$

Select one:

○ a.   A

○ b.   B

○ c.   C

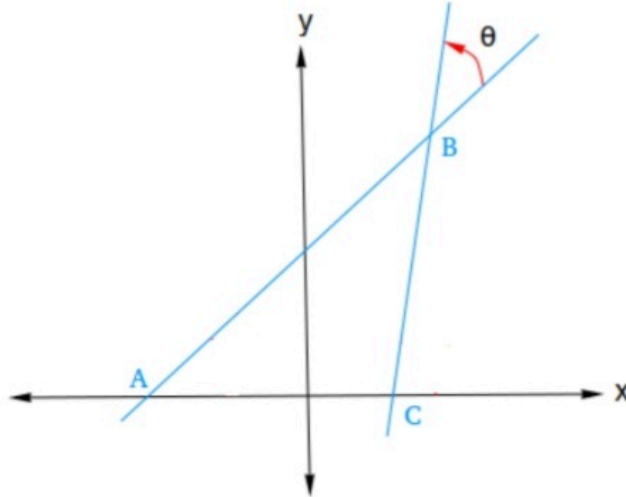○ d.   D

○ e.   E

Your answer is incorrect.

The correct answer is: C

Question 39

Not answered

v1 (latest)

. In the xy −plane, consider the points $A(-3,0)$, $B(3,5)$ and $C(2,0)$ as shown in the figure below. What is the approximate measure, in degrees, of the angle θ?

A. $39°$
B. $40°$
C. $62°$
D. $79°$
E. $28°$

Select one:

○ a.   A

○ b.   B

○ c.   C

○ d.   D

○ e.   E

Your answer is incorrect.

The correct answer is: A

Question 40

Not answered

(v1 (latest))

The point K(1, —3) is rotated about the origin through an angle of 90' in an anti-clockwise direction. What are the coordinates of the image of K?

Select one:

○ a.   (-1, -3)

○ b.   (3,1)

○ c.   (-3, -1)

○ d.   (- 3, 1)

○ e.   (1, 3)

Your answer is incorrect.

The correct answer is: (3,1)

Question 41

Not answered

(v1 (latest))

What is the nature of triangle ABC if A(2, 3, 1), B(-1, 3, 0) and C(2, 3, -1)?

Select one:

○ a.   Isosceles

○ b.   Right

○ c.   Right isosceles

○ d.   Equilateral

○ e.   Scalene

Your answer is incorrect.

The correct answer is: Isosceles

Question 42

Not answered

v1 (latest)

A hollow cube of internal edge 20 cm is filled with identical spherical marbles of diameter 0.6 cm each, and it is assumed that $\frac{1}{8}$th space of the cube remains unfilled. What is the number of marbles, rounded to the nearest integer, that the cube can accommodate?

Select one:

- a. 70,000
- b. 61,894
- c. 70,736
- d. 7,737
- e. 65,235

Your answer is incorrect.

The correct answer is: 61,894

Question 43

Not answered

v1 (latest)

Triangle ABC is right at C. If BC = x, AC = 2x where x is a positive real number and angle BAC = θ, then sin 2θ =

Select one:

- a. $\frac{1}{5}$
- b. $\frac{2}{5}$
- c. $\frac{3}{5}$
- d. $\frac{4}{5}$
- e. 1

Your answer is incorrect.

The correct answer is: $\frac{4}{5}$

Question 44

Not answered

v1 (latest)

Which could be a value of $\sin \theta$ if $\frac{7\pi}{4} < \theta < 2\pi$?

Select one:

- a. $\frac{-4}{5}$
- b.   -1
- c. $\frac{-1}{2}$
- d. $\frac{1}{4}$
- e. $\frac{1}{2}$

Your answer is incorrect.

The correct answer is: $\frac{-1}{2}$

Question 45

Not answered

v1 (latest)

If $\cos\left(\frac{\pi}{2} - \theta\right) = \frac{2}{\sqrt{3}}$, then what is the value of $\frac{\sin\theta}{\csc\theta}$?

Select one:

- a. $\frac{2}{\sqrt{3}}$
- b.   1
- c. $\frac{4}{3}$
- d. $\frac{\sqrt{3}}{2}$
- e. $\frac{3}{4}$

Your answer is incorrect.

The correct answer is: $\frac{4}{3}$

Question 46

Not answered

v1 (latest)

If the mean of a normal distribution is 55 and the standard deviation is 5, then almost all of the scores are likely to fall between:

Select one:

○ a.   40 and 70

○ b.   50 and 60

○ c.   30 and 55

○ d.   55 and 80

○ e.   60 and 90

Your answer is incorrect.

The correct answer is: 40 and 70

Question 47

Not answered

v1 (latest)

A survey is done in an enterprise having 20% administrators and 80% employees. We know that 5% of the administrators and 20% of the employees speak Spanish.

A person is chosen randomly from the enterprise, what is the probability that he/she speaks Spanish?

Select one:

○ a.   0.26

○ b.   0.17

○ c.   0.25

○ d.   0.08

○ e.   0.48

Your answer is incorrect.

The correct answer is: 0.17

Question 48

Not answered

v1 (latest)

A box contains 24 marbles of red, green and yellow colors. If two marbles are drawn randomly and simultaneously from the box, the probability that both are red is $\frac{15}{92}$. What is the number of the non-red marbles?

Select one:

○ a.   10

○ b.   16

○ c.   14

○ d.   20

○ e.   18

Your answer is incorrect.

The correct answer is: 14

Question 49

Not answered

v1 (latest)

Which of the numbers below is not the mean, median, mode or range of the data set

5, 2, 4, 5, 10, 16, 12, 18, 15, 13?

Select one:

○ a.   10

○ b.   11

○ c.   5

○ d.   8

○ e.   16

Your answer is incorrect.

The correct answer is: 8

Question 50

Not answered

v1 (latest)

A regression analysis between sales (Y) and advertising (X) across all the branches in Egypt of a major company resulted in the following equation Y = 40,000 + 6.25 X.

If the advertising budgets of the two branches in Giza and Alexandria differ by 200,000 EGP, then what will be the predicted difference in their sales?

Select one:

- a. 12.5 EGP
- b. 80,000 EGP
- c. 160,000 EGP
- d. 250,000 EGP
- e. 1,250,000 EGP

Your answer is incorrect.

The correct answer is: 1,250,000 EGP