Started on	Wednesday, 3 July 2024, 5:45 PM
State	Finished
Completed on	Wednesday, 3 July 2024, 5:47 PM
Time taken	1 min 36 secs
Grade	**0.00** out of 50.00 (**0**%)

Question **1**

Not answered

Marked out of 1.00

Solve the following system of linear equations:

x+2y-z=-2

x-6y+z=40

-x+4y+z=5

- a. x=20 y=0.5 z=23
- b. x=21 y=1 z=25
- c. x=19 y=0.5 z=22
- d. x=21 y=1 z=2.5
- e. x=10 y=22 z=2.5

Question **2**

Not answered

Marked out of 1.00

If $12^{24} - 12^{22} = 12^{22} \cdot n$, what is the value of n ?

- a. ***2***
- b. ***143***
- c. ***11***
- d. ***12***
- e. ***121***

Question **3**

Not answered

Marked out of 1.00

Concrete is made by mixing cement, sand, and gravel in the ratio ***5 : 9 : 13***. How much cement is needed to make **324 ft^3** of concrete?

a. **84 ft^3**

b. **90 ft^3**

c. **54 ft^3**

d. **60 ft^3**

e. **108 ft^3**

Question **4**

Not answered

Marked out of 1.00

Find the solution of the following equation

$xln9 + ln28 = ln12 + xln49.$

a. e

b. 1/3

c. 1

d. 1/2

e. 1/4

Question **5**

Not answered

Marked out of 1.00

3x^2-48

Which of the following is equivalent to the expression above?

a. ***3(x-4)(x+4)***

b. ***(3x-4)(x-4)***

c. ***(3x-4)(x+4)***

d. ***3(x-4)^2***

e. ***(3x+4)(x-4)***

Question **6**

Not answered

Marked out of 1.00

Which of the following expressions is **NOT** equivalent to *3[6a-3(1-a)-5(a+1)]* ?

a. *12a-24*

b. *12(a-2)*

c. *24(0.5a-1)*

d. *24(a-0.5)*

Question **7**

Not answered

Marked out of 1.00

$$f(x) = x^2 - b$$

In the function above, *b* is a constant. If *f(-2)=7*, what is the value of *f(b)* ?

a. *-3*

b. *3*

c. 6

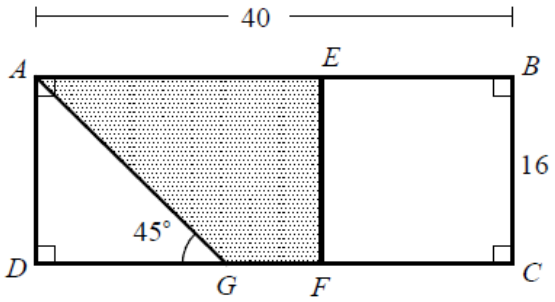
d. *-12*

e. *12*

Question **8**

Not answered

Marked out of 1.00



In the figure above, ***ABCD*** is a rectangle and ***BCFE*** is a square. If ***AB*** = 40 , ***BC*** = 16 , and ∠***AGD***=45º, what is the area of the shaded region?

a. 240

b. 256

c. 248

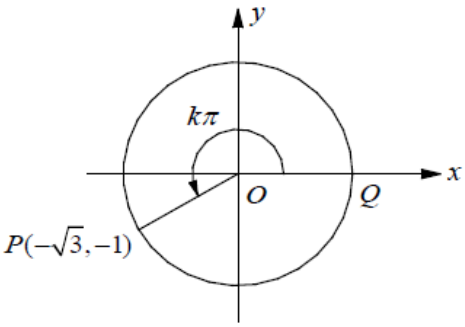
d. 252

e. 264

Question **9**

Not answered

Marked out of 1.00



In the ***xy***-plane above, ***O*** is the center of the circle, and the measure of the angle shown is ***kπ*** radians.

What is the value of ***k*** ?

a. $\frac{5}{7}$

b. $\frac{5}{6}$

c. $\frac{4}{3}$

d. $\frac{5}{3}$

e. $\frac{7}{6}$

Question **10**

Not answered

Marked out of 1.00

The **second** order derivative of the function x^{20} at $x = 1$ equals

a. 380

b. -1/20

c. 20

d. 1/20

e. 19

Question **11**

Not answered

Marked out of 1.00

$$\frac{x}{x-3} - 2 = \frac{4}{x-2}$$

What is the solution set of the equation above?

a. {0; 4}

b. {0; 2}

c. {4}

d. {0}

e. {2; 4}

Question **12**

Not answered

Marked out of 1.00

$$\sqrt{2x+6} = x+3$$

What is the solution set of the equation above?

a. {-3}

b. {2}

c. {-3,2}

d. {-1}

e. {-3,-1}

Question **13**

Not answered

Marked out of 1.00

If $n = a + (k-1)d,$ which of the following gives *k* in terms of the other variables?

a. $k = \dfrac{n-a-d}{d}$

b. $k = \dfrac{n-a+1}{d}$

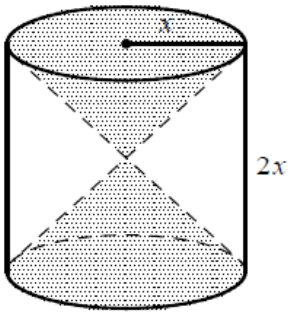
c. $k = \dfrac{n-a+d}{d}$

d. $k = \dfrac{n+a-1}{d}$

Question **14**

Not answered

Marked out of 1.00



In the figure above, a double cone is inscribed in a cylinder whose radius is ***x*** and height is ***2x***.

What is the volume of the space inside the cylinder but outside the double cone, in terms of ***x*** ?

a. $\frac{1}{3}\pi x^3$

b. $\frac{4}{3}\pi x^3$

c. $\frac{1}{2}\pi x^3$

d. $\frac{2}{3}\pi x^3$

e. $\frac{3}{2}\pi x^3$

Question **15**

Not answered

Marked out of 1.00

A new office building will have 640 workers. A construction code requires that new buildings have 2 restrooms for every 80 workers in the building.

Based on the construction code, what is the total number of restrooms the new office building must have?

a. 12

b. 8

c. 4

d. 20

e. 16

Question **16**

Not answered

Marked out of 1.00

If $f(x) = \frac{1-5x}{2}$ and $g(x) = 2 - x$, what is the value of $f(g(3))$?

a. -3

b. 3

c. -2

d. 2

e. -7

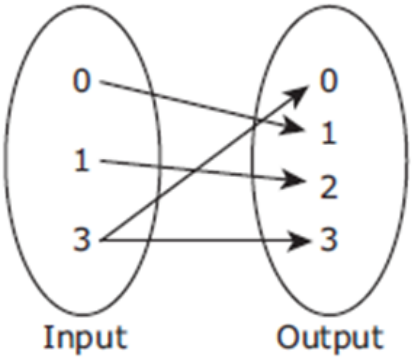
Question **17**

Not answered

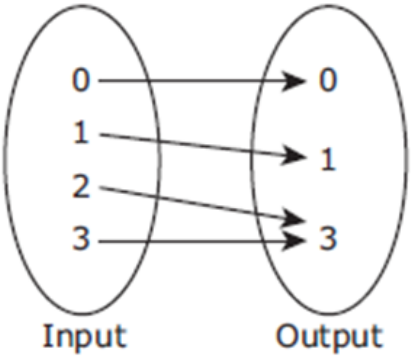
Marked out of 1.00

Which of the following is not a function?

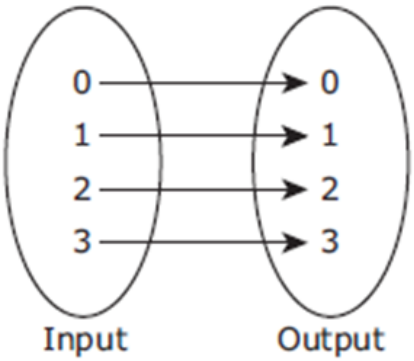
a.



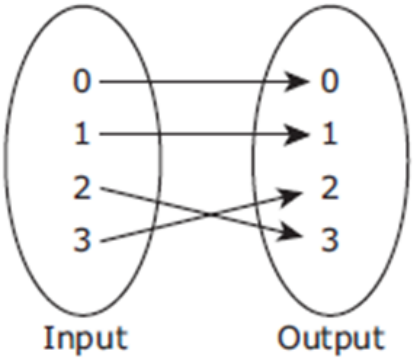
b.



c.



d.



Question **18**

Not answered

Marked out of 1.00

Solve for a in the below:

$\int_0^a (1-x)dx = \frac{1}{2}$

a. 0

b. 27

c. 9

d. 1

e. -9

Question **19**

Not answered

Marked out of 1.00

If *-3+n<25*, which inequality represents the possible range of values for *4n-12* ?

a. *4n-12<0*

b. *4n-12>100*

c. *4n-12>-100*

d. *4n-12<100*

e. *4n-12<-100*

Question **20**

Not answered

Marked out of 1.00

Find the limit

$\lim_{x\to 2} \frac{x^3-8}{x^2-4}$

a. ∞

b. 1

c. 4

d. 3

e. 0

Question **21**

Not answered

Marked out of 1.00

$$a(2-a)+(a^2+3)-(2a+1)$$

Which of the following is equivalent to the expression shown above?

a. *2a+2*

b. *4a*

c. *4a*

d. *2*

e. *2a-2*

Question **22**

Not answered

Marked out of 1.00

The function f is given by

$f(x) = 4 - ln(2x-1),\ x \in \mathbb{R}, x > \frac{1}{2}$..

Solve the equation $f(x) = f \circ f(1)$.

a. 1

b. 0

c. 3

d. 4

e. e

Question **23**

Not answered

Marked out of 1.00

$$(2x+3)(ax-1)-2x^2+3$$

In the expression above, a is a constant. If the expression is equivalent to bx, where b is a constant, what is the value of b ?

a. 0

b. 1

c. 12

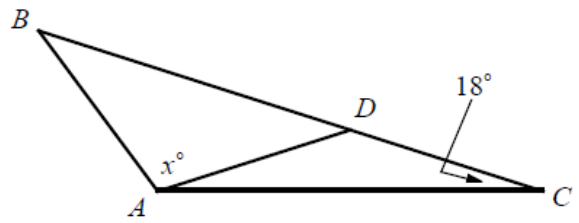
d. -3

e. 4

Question **24**

Not answered

Marked out of 1.00



In ΔABC above, if ***AB=AD=DC***, what is the value of ***x*** ***(∠ BAD)*** ?

a. 102

b. 108

c. 120

d. 96

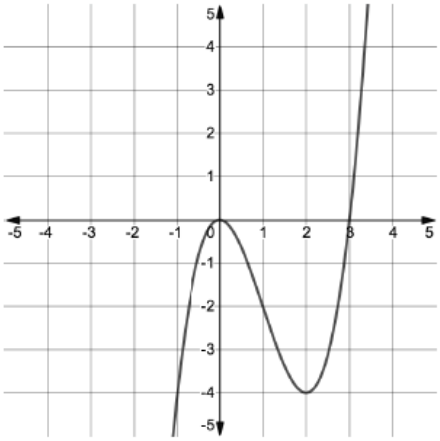
e. 92

Question **25**

Not answered

Marked out of 1.00

The function *f(x)* is graphed below. Which of the following could define the function *f(x)* ?



a. $f(x)=x^2$

b. $f(x)=x(x+3)$

c. $f(x)=x^2(x+3)$

d. $f(x)=x^2(x-3)$

e. $f(x)=x(x-3)$

Question **26**

Not answered

Marked out of 1.00

A pump introduces water at a pressure of 500 kPa and with a speed of 10 m/s inside a duct. The maximum height that water can reach, neglecting viscosity, is:

- a. 5.6 cm
- b. 56 m
- c. 56 cms
- d. 560 m
- e. 5.6 m

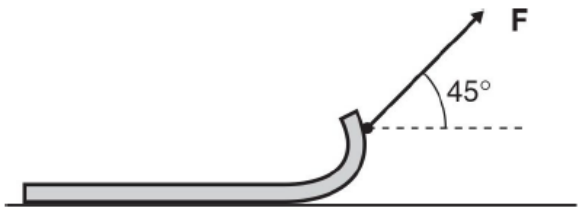
Question **27**

Not answered

Marked out of 1.00

A force of 50 N directed at an angle of 45° from the horizontal pulls a 70 kg sled across a frictionless pond.

The acceleration of the sled is most nearly (sin 45° = cos 45° = 0.7)



- a. 0.7 m/s^2
- b. 35 m/s^2
- c. 5 m/s^2
- d. 0.5 m/s^2
- e. 50 m/s^2

Question **28**

Not answered

Marked out of 1.00

Which of the following **cannot** be considered a physical quantity?

- a. The distance
- b. The capacity
- c. The weight
- d. The volition
- e. An acceleration

Question **29**

Not answered

Marked out of 1.00

Two communicating rooms of equal volume (equal pressure) contain an ideal gas. The temperatures T1 and T2 are different in the two rooms. It follows that:

- a. there is more air in the colder room
- b. there is more air in the warmer room
- c. the amount of air is the same in both rooms
- d. nothing can be concluded
- e. none of the previous answers are correct

Question **30**

Not answered

Marked out of 1.00

Two point masses m_A and $m_B=2m_A$ resting on a horizontal smooth plane are each connected to a spring disposed horizontally, whose other end, and kept fixed. The two bodies swing on the plane. The springs both have elastic constant k. With the same deformation of the springs, what relationship is there between the acceleration modules of the two bodies?

- a. $2a_B=a_A$
- b. $a_B=2a_A$
- c. It cannot be answered because the initial velocities of the two bodies are unknown
- d. $a_B=a_A$
- e. $2/ka_B=a_A$

Question **31**

Not answered

Marked out of 1.00

What force do we have to apply to lift an object from the ground?

- a. A force directed downwards and with a modulus greater than the weight of the object
- b. A force directed upwards and with a modulus greater than the weight of the object
- c. A force directed downwards and with modulus greater than zero
- d. It depends on the shape of the body
- e. A force directed upwards and with modulus greater than zero

Question **32**

Not answered

Marked out of 1.00

A magnet moves into a coil of wire, inducing a current in the wire. If the magnet is pulled back out of the coil in the opposite direction as it went into the coil, which of the following will occur?

- a. There will be a current produced in the coil in the same direction as before.
- b. There will be a current produced in the coil in the opposite direction as before.
- c. The current produced must be weaker than before.
- d. The current produced must be stronger than before.
- e. There will be no current produced in the coil.

Question **33**

Not answered

Marked out of 1.00

A potential difference of 100 V is applied across a 50 ohm resistor; the intensity of the current produced is:

- a. 150 A
- b. 500 A
- c. 0.5 A
- d. 500 A
- e. 2 A

Question **34**

Not answered

Marked out of 1.00

A rod of material A stretches by 10 cm when subjected to a temperature increase of 50^0 C. Knowing that the ratio between the coefficients of thermal expansion of materials A and B is equal to 0.5, what temperature increase must be given to a bar of material B so that it undergoes the same length variation as the bar of material A?

a. 50^0 C

b. 25^0 C

c. 100^0 C

d. 10^0 C

e. 250^0 C

Question **35**

Not answered

Marked out of 1.00

The magnetic field strength B at a point near a very long current-carrying wire is:

a. proportional to the current and inversely proportional to the distance of the point from the wire

b. proportional to the distance of the point from the wire and inversely proportional to the current

c. proportional to the length of the thread and inversely proportional to the distance from the stitch to the thread

d. proportional to wire length and inversely proportional to current

e. proportional to the current and inversely proportional to the length of the wire

Question **36**

Not answered

Marked out of 1.00

A ball is thrown upwards. Which of the following statements is **false**?

a. The kinetic energy of the ball decreases as it rises.

b. As the ball rises, the force of gravity opposes the motion.

c. The potential energy of the ball increases as it rises.

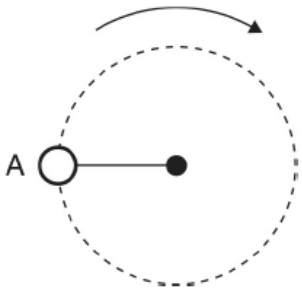
d. The kinetic energy of the ball is a function of its speed.

e. As the ball rises, the force of gravity does positive work on it.

Question **37**

Not answered

Marked out of 1.00



A ball on the end of a string is swung in a horizontal circle, rotating clockwise as shown.

If the string were suddenly cut when the ball is at point A in the figure above, the subsequent motion of the ball would be

- a. to move to the left.
- b. to move to the right.
- c. to move to the bottom of the page.
- d. to move to the top of the page.
- e. to move up and to the left.

Question **38**

Not answered

Marked out of 1.00

A cannonball is fired from a cannon so that the cannon recoils backward as the ball is fired forward.

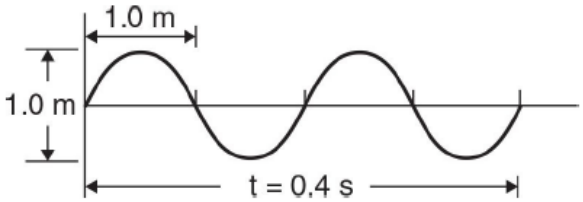
Which of the following statements is true?

- a. The mass of the cannonball and the cannon must be equal.
- b. The momentum of the cannon must be equal to the magnitude of the momentum of the cannonball.
- c. The momentum of the cannon must be greater than the magnitude of the momentum of the cannonball.
- d. The velocity of the cannonball is equal and opposite to the velocity of the cannon.
- e. The momentum of the cannonball must be greater than the magnitude of the momentum of the cannon.

Question **39**

Not answered

Marked out of 1.00



The frequency of the wave shown above is

- a. 2 Hz.
- b. 5 Hz.
- c. 4 Hz.
- d. 0.2 Hz.
- e. 0.4 Hz.

Question **40**

Not answered

Marked out of 1.00

In a region of space the electric potential is constant. What does it mean and what can be said about the electric field in this region?

- a. The work to place an electric charge between any two points is path independent and the electric field is uniform
- b. The work to move an electric charge between any two points is independent of the path and the electric field is zero
- c. The work to move an electric charge between any two points is zero and the electric field is zero
- d. The work to move an electric charge between any two points is zero and the electric field is uniform
- e. None of the previous answers is correct

Question **41**

Not answered

Marked out of 1.00

I want ..... of water.

- a. a glass
- b. a box
- c. a cup
- d. a bowl

Question **42**

Not answered

Marked out of 1.00

Those are ..... good pupils.

- a. –
- b. a
- c. an
- d. the

Question **43**

Not answered

Marked out of 1.00

“My father loves Jazz” “ ..... !”

- a. so I am
- b. so am I
- c. so did I
- d. so do I

Question **44**

Not answered

Marked out of 1.00

What's ..... job?

- a. he
- b. your
- c. you
- d. yours

Question **45**

Not answered

Marked out of 1.00

Fruit and vegetables are healthy. = Fruit and vegetables are.....

- a. health some
- b. good for health
- c. good for you
- d. benefit for you

Question **46**

Not answered

Marked out of 1.00

My brother ..... glasses.

- a. used to wear
- b. use to wear
- c. using to wear
- d. use to wearing

Question **47**

Not answered

Marked out of 1.00

He put the money in his.....

- a. credit card
- b. coins
- c. wallet
- d. purse

Question **48**

Not answered

Marked out of 1.00

The water is dirty. You must not ..... it.

- a. eat
- b. drink
- c. have
- d. speak

Question **49**

Not answered

Marked out of 1.00

There is a lot about the brain that we do not yet understand. Believe it or not, people used to think of the brain as useless stuffing. Of course, we now know the brain is our control centre. The surface of the brain is called the cerebral cortex. It is the part of the brain that makes us intelligent, and it consists of four parts called lobes. The front lobe is where much of our thinking and feeling happens. The top lobe processes information which is coming from parts of our bodies, such as our skin and muscles. The side lobe plays an important role in hearing, speech and long-term memories while the back lobe processes images from our eyes. The cerebral cortex consists of…

- a. useless stuffing
- b. four parts called neurons
- c. long-term memories
- d. four parts called lobes

Question **50**

Not answered

Marked out of 1.00

When cities started to become too busy, people who could afford it moved out into the suburbs on the edge of the city. When the suburbs started attracting too many people, they moved further out into villages and the countryside. It was important to be close enough to the city to travel in every day for work, though. That's why the countryside became more popular – London, for example, lost 15% of its population between 1950 and 1970, and Detroit in the USA lost 47%. Areas on the edge of the city became popular because …

- a. people there had less money.
- b. cities were getting too full.
- c. villages became too expensive.
- d. the countryside was almost empty.