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Time taken 3 mins 15 secs

Grade 0.00 out of 50.00 (0%)

Question 1

Not answered

Marked out of 1.00

A 32-acre field yields 768 bushels of corn each year. How many more acres are needed to yield 960 bushels of corn each year?

- a. 6
- b. 12
- c. 16
- d. 10
- e. 8

Question 2

Not answered

Marked out of 1.00

If

$$f(x) = 4e^{-x}, x \in \mathbb{R} \text{ and } g(x) = x + 2, x \in \mathbb{R}.$$

Solve the equation $g \circ f(x) = \frac{10}{3}$.

- a. $\ln 3$
- b. 1
- c. $\ln 2$
- d. e^{-1}
- e. none of these answers

Question 3

Not answered

Marked out of 1.00

$$4x + 13 = 7(x - 2) + bx$$

If the linear equation above has **no** solution, which of the following could be the value of b ?

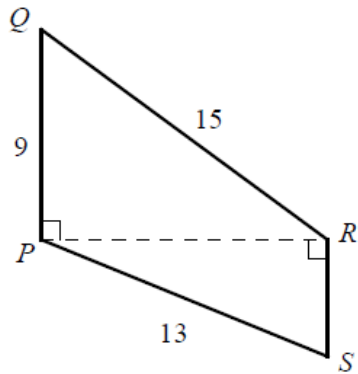
- a. -3

- b. -2
- c. -1
- d. -4

Question 4

Not answered

Marked out of 1.00

What is the area of trapezoid **PQRS** above?

- a. 72
- b. 76
- c. 64
- d. 84
- e. 58

Question 5

Not answered

Marked out of 1.00

If $(x+3)^3 = -64$, what is the value of x ?

- a. -6
- b. -4
- c. -2
- d. -3
- e. -7

Question 6

Not answered

Marked out of 1.00

$$-x^2+5x+84$$

Which of the following is equivalent to the expression above?

- a. $(12+x)(x-7)$
- b. $(12-x)(x+7)$
- c. $(21+x)(x-4)$
- d. $(12-x)(x-7)$
- e. $(21-x)(x+4)$

Question 7

Not answered

Marked out of 1.00

Solve the following system of linear equations. Find the sum $x+y+z=?$

$$2x+y+z=4$$

$$x+y+2z=1$$

$$x-2y+z=-1$$

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

Question 8

Not answered

Marked out of 1.00

The ratio of mass to volume for a type of metal is 27 grams to 10 cubic centimeters. A sample of the metal has a mass of 81 grams.

What is the volume, in cubic centimeters, of the sample of metal?

- a. 64
- b. 118
- c. 18
- d. 810
- e. 30

Question 9

Not answered

Marked out of 1.00

Calculate the following integral

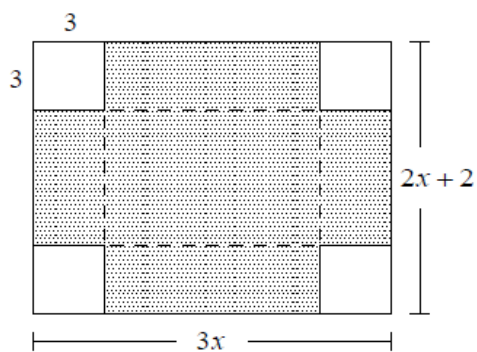
$$\int_1^{\infty} \frac{4}{x^4} dx$$

- a. 1/3
- b. 1
- c. 0
- d. 2/3
- e. 4/3

Question 10

Not answered

Marked out of 1.00



A manufacturing company produces cardboard boxes by cutting out square corners **3** inches by **3** inches from rectangular pieces of cardboard **$3x$** inches by **$2x+2$** inches.

The cardboard is then folded along the dashed lines to form a box without a top.

If the volume of the box is **162 in^3** , what is the dimension of the original cardboard before cutting out its square corners?

- a. **(14 in) x (10 in)**
- b. **(9 in) x (12 in)**
- c. **(16 in) x (14 in)**
- d. **(20 in) x (15 in)**
- e. **(15 in) x (12 in)**

Question 11

Not answered

Marked out of 1.00

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

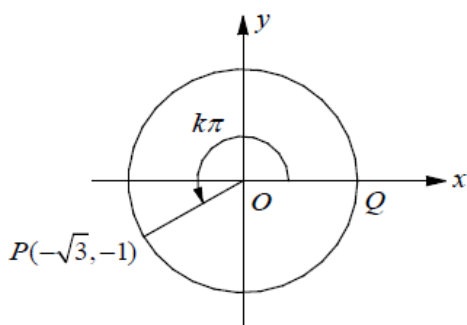
What is the solution set of the equation above?

- a. 1
- b. 0
- c. 2
- d. -2
- e. There is no solution to the equation.

Question 12

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 $k\pi$ radians.What is the value of $\tan(k\pi)$?

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

Question 13

Not answered

Marked out of 1.00

If x and y are positive integers and $12^3 = 2^x 3^y$, what is the value of $x+y$?

- a. 9
- b. 8
- c. 6
- d. 10
- e. 7

Question 14

Not answered

Marked out of 1.00

$$1+2x-x(1+2x)$$

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

- a. $x(1-2x)$
- b. $(1-2x)^2$
- c. $-x(1+2x)$
- d. $(1+2x)(1-2x)$
- e. $(1+2x)(1-x)$

Question 15

Not answered

Marked out of 1.00

Which of the following expressions is equivalent to

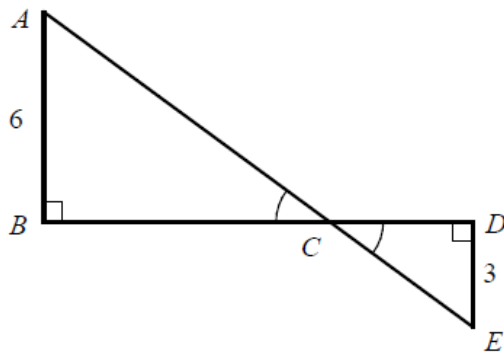
$$\frac{2}{3}(a^2 - a - 3) + \frac{1}{3}(a^2 + 2a + 6)$$

- a. a^2
- b. a^2-1
- c. none of these
- d. a^2-a
- e. a^2+a

Question 16

Not answered

Marked out of 1.00



In the figure above, if $AB=6$, $DE=3$, and $BD=12$, what is the length of AE ?

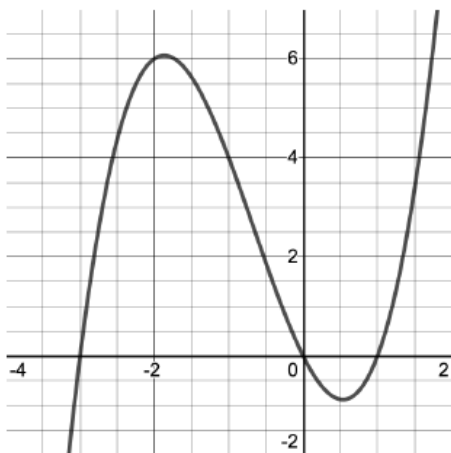
- a. 15
- b. 18
- c. 20
- d. 12
- e. 10

Question 17

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. $f(x)=(x-6)(x+3)(x-1)$
- b. $f(x)=x(x-3)(x+1)$
- c. $f(x)=x(x+3)(x-1)$
- d. $f(x)=(x-3)(x+1)$
- e. $f(x)=(x+3)(x-1)$

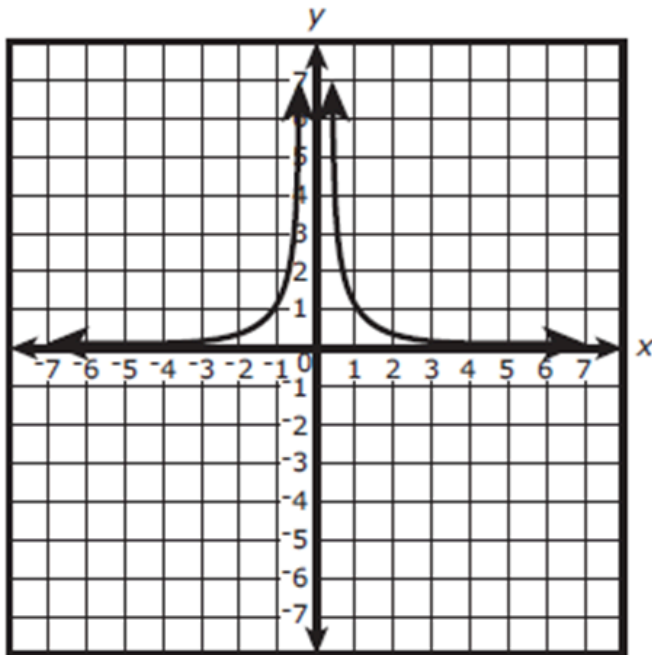
Question 18

Not answered

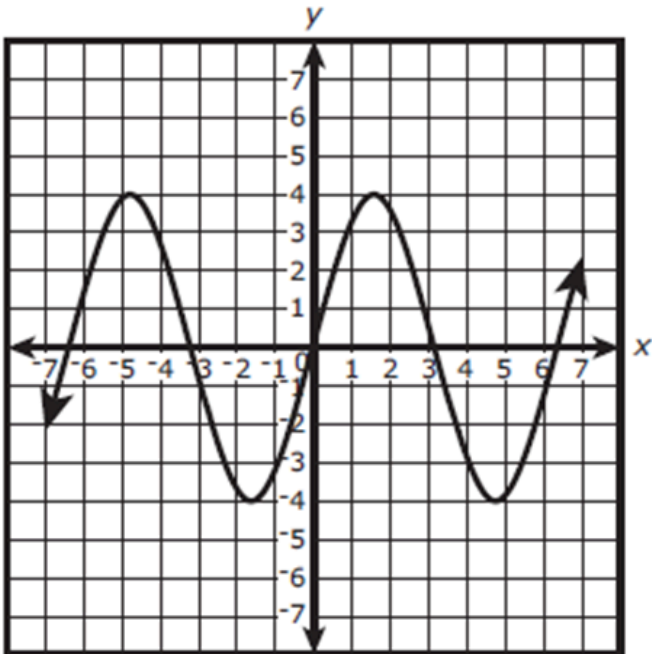
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Which of the following graphs shows a relationship that is **not** a function?

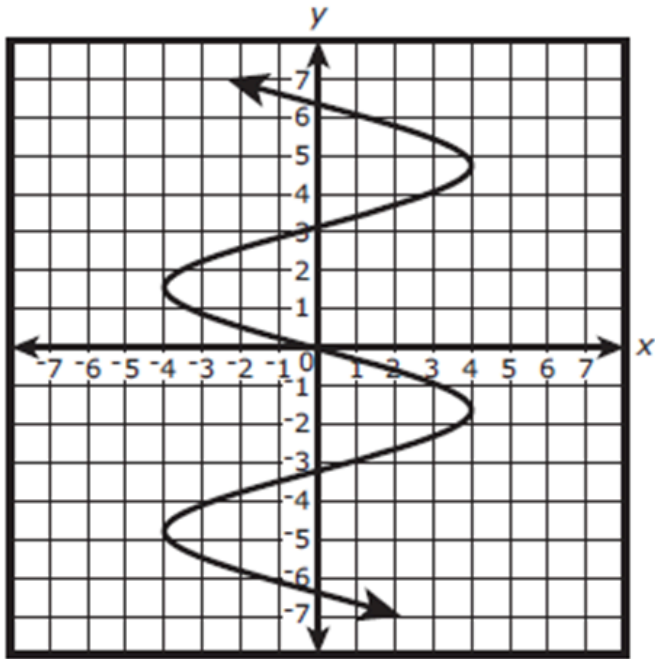
a.



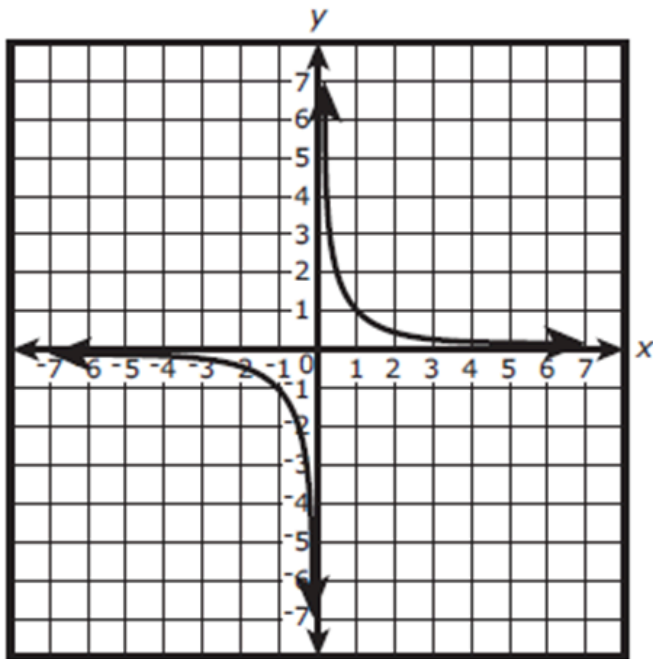
b.



c.



d.



Question 19

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. 6
- b. 12
- c. -12

- d. -3
- e. 3

Question 20

Not answered

Marked out of 1.00

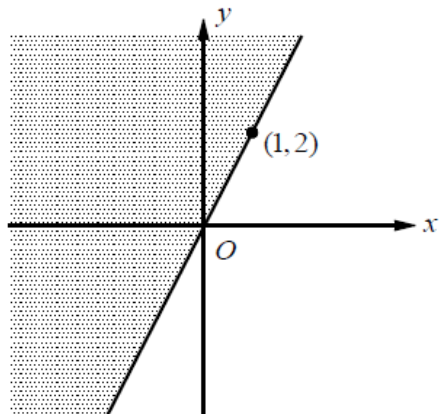
Find the differentiation of $f(x)=4 \ln x^3$

- a. $12/x$
- b. x
- c. $4 \ln x$
- d. e^x
- e. $4/x^3$

Question 21

Not answered

Marked out of 1.00



Which of the following inequalities represents the graph above?

- a. $x-2y \geq 0$
- b. $x-2y \leq 0$
- c. $2x+y \geq 0$
- d. $2x-y \geq 0$
- e. $2x-y \leq 0$

Question 22

Not answered

Marked out of 1.00

If $f = \{(-4, 12), (-2, 4), (2, 0), (3, \frac{3}{2})\}$ and $g = \{(-2, 5), (0, 1), (4, -7), (5, -9)\}$, what is the value of $g \circ f(2)$?

- a. -7
- b. 1
- c. -9
- d. 0
- e. 5

Question 23

Not answered

Marked out of 1.00

In the equation $(ax + 3)^2 = 49$, a is a constant. If $x = -2$ is one solution to the equation, what is a possible value of a ?

- a. 0
- b. -1
- c. -5
- d. -2
- e. 1

Question 24

Not answered

Marked out of 1.00

Find the limit

$$\lim_{x \rightarrow \infty} \frac{4-x^2}{x^2-1}$$

- a. 0
- b. -4
- c. -1
- d. ∞
- e. 1

Question **25**

Not answered

Marked out of 1.00

Find the solution of the following equation

$$2\ln t + \ln 3 = \ln(5t + 2).$$

- a. 1
- b. e
- c. 3
- d. 0
- e. 2

Question **26**

Not answered

Marked out of 1.00

In a circular motion, knowing angular velocity and radius:

- a. It is possible to calculate the tangential acceleration, if the mass is also known
- b. It is possible to calculate the tangential acceleration, if the mass and the centripetal acceleration are also known
- c. It is possible to calculate the tangential speed
- d. The centripetal force can be calculated
- e. None of the other answers are correct

Question **27**

Not answered

Marked out of 1.00

As a planet orbits the Sun, which of the following must remain constant?

- a. the product of mass and velocity
- b. angular momentum
- c. velocity
- d. radius of orbit
- e. gravitational force

Question **28**

Not answered

Marked out of 1.00

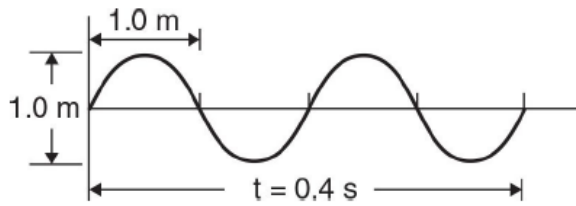
Wanting to make the water reach a height of 10 m, starting from the condition of rest and considering the water an ideal fluid, an overpressure of:

- a. 98 cmH₂O
- b. 98 Pa
- c. 98 cmHg
- d. 8 atm
- e. 98 kPa

Question 29

Not answered

Marked out of 1.00



The amplitude of the wave shown above is

- a. 2.0 m.
- b. 0.5 m.
- c. 1.0 m.
- d. 4.0 m.
- e. 6.0 m.

Question 30

Not answered

Marked out of 1.00

For electromagnetic induction to occur,

- a. a magnet and a coil must have the same velocity.
- b. a magnet must move through a coil of wire.
- c. a magnet must be at rest within a coil of wire.
- d. a coil of wire must be at rest relative to the magnet.
- e. a magnet must be pointing north.

Question 31

Not answered

Marked out of 1.00

If the intensities of two charges are doubled and their distance is doubled at the same time, the force of attraction of the charges:

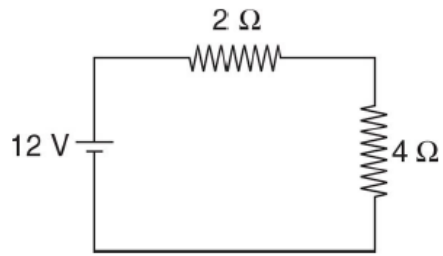
- a. doubles
- b. is halved
- c. quadruples
- d. remains unchanged
- e. none of the above answers are correct

Question 32

Not answered

Marked out of 1.00

Two resistors of $2\ \Omega$ and $4\ \Omega$ are placed in series with a $12\ \text{V}$ battery.



The voltage across the $4\ \Omega$ resistor is

- a. $4\ \text{V}$.
- b. $6\ \text{V}$.
- c. $12\ \text{V}$.
- d. $3\ \text{V}$.
- e. $8\ \text{V}$.

Question 33

Not answered

Marked out of 1.00

A force of $20\ \text{N}$ is needed to overcome a frictional force of $5\ \text{N}$ and accelerate a $3\ \text{kg}$ mass across a floor.

What is the acceleration of the mass?

- a. $60\ \text{m/s}^2$
- b. $20\ \text{m/s}^2$
- c. $5\ \text{m/s}^2$
- d. $7\ \text{m/s}^2$
- e. $4\ \text{m/s}^2$

Question **34**

Not answered

Marked out of 1.00

The plates of a plate capacitor, charged and isolated in a vacuum, are drawn parallel from each other. The new capacitor thus obtained:

- a. the potential difference between the plates has remained unchanged
- b. has null capacity
- c. stores the same electrostatic energy as the initial one

- d. stores more electrostatic energy than the initial one
- e. stores less energy and electrostatics than the initial one

Question 35

Not answered

Marked out of 1.00

The elastic forces of two springs, elongated by x_1 and x_2 respectively, have the same intensity. If $x_1/x_2=2/3$, how much is the ratio k_1/k_2 of elastic constants?

- a. 3/2
- b. 2/3
- c. 1/2
- d. 4/3
- e. 1/4

Question 36

Not answered

Marked out of 1.00

Volt/metre is the unit of

- a. Potential
- b. none of these answers
- c. Electric field intensity
- d. Work
- e. Force

Question 37

Not answered

Marked out of 1.00

Which of the following quantities are conserved in an elastic collision?

- a. momentum and kinetic energy
- b. momentum and potential energy
- c. kinetic energy only
- d. momentum only
- e. momentum and velocity

Question 38

Not answered

Marked out of 1.00

Which of the following is **correct**?

- a. The kinetic energy of a system can be changed without changing the momentum
- b. The kinetic energy of a system cannot be changed without changing the momentum
- c. The momentum of a system cannot be changed without changing its kinetic energy
- d. A system cannot have energy without having momentum
- e. None of the above are correct

Question 39

Not answered

Marked out of 1.00

A 3 kg block of aluminum is heated so that its temperature increases by 3 degrees.

How much heat would be needed to raise the temperature of a 9 kg block of aluminum by 3 degrees?

- a. 3 times as much heat as the 3 kg block
- b. 9 times as much heat as the 3 kg block
- c. the same amount of heat as the 3 kg block
- d. one-third as much heat as the 3 kg block
- e. one-ninth as much heat as the 3 kg block

Question 40

Not answered

Marked out of 1.00

Is it possible to compress an ideal gas at constant temperature abatically?

- a. Yes, and the work done by the gas will be positive
- b. Yes, and the work done by the gas will be negative
- c. Yes, and the work done by the gas will be zero
- d. No, it's not possible
- e. None of the previous answers are correct

Question 41

Not answered

Marked out of 1.00

I was pleased to see him at the meeting today; but unfortunately hebe there tomorrow.

- a. will be able to
- b. is going to
- c. must
- d. won't be able to

Question 42

Not answered

Marked out of 1.00

If I have enough money left, I'll buy some cheese, _____.

- a. after
- b. too
- c. either
- d. a little

Question 43

Not answered

Marked out of 1.00

Listen! Do you hear that funny coming from the kitchen?

- a. taste
- b. noise
- c. smell
- d. feeling

Question **44**

Not answered

Marked out of 1.00

That is.....

- a. Tom house
- b. houses's Tom
- c. house of Tom
- d. Tom's house

Question **45**

Not answered

Marked out of 1.00

There are.....at the zoo.

- a. goose
- b. ox
- c. fox
- d. fish

Question **46**

Not answered

Marked out of 1.00

Choose the word which is out of the logic list.

- a. envelope
- b. letter
- c. crossword
- d. post office

Question 47

Not answered

Marked out of 1.00

According to a recent survey, 20% of the households on Agatti report lagoon fishing, or shingle, mollusc, octopus and cowrie collection as their main occupation. For poor households, the direct contribution of the reef to their financial resources is significant: 12% of poor households are completely dependent on the reef for their household income, while 59% of poor households rely on the reef for 70% of their household income, and the remaining 29% for 50% of their household income. What proportion of poor households get all their income from reef products?

- a. 29 %
- b. 12 %
- c. 59 %
- d. 20 %

Question 48

Not answered

Marked out of 1.00

Worry is increasing over the problems facing Ireland's 200,000 students as the number increases over the next 15 years. With 165,000 full-time students in Ireland – and that figure expected to increase to around 200,000 within the next 15 years – fears remain that there aren't enough properties to accommodate current numbers. What number the full time students in Ireland is expected to increase within the next 15 years?

- a. Less than 200 thousand
- b. A little more than 150 thousand
- c. Not more than 165 thousand
- d. Around 200 thousand

Question 49

Not answered

Marked out of 1.00

Why is she sitting there all herself in the dark?

- a. lonely
- b. with
- c. by
- d. alone

Question **50**

Not answered

Marked out of 1.00

Which do you come from?

- a. nation
- b. year
- c. country
- d. date