ID: beca03de

A rectangle has a length that is 15 times its width. The function $y = (15w)(w)$ represents this situation, where y is the area, in square feet, of the rectangle and $y > 0$. Which of the following is the best interpretation of $15w$ in this context?

A. The length of the rectangle, in feet

B. The area of the rectangle, in square feet

C. The difference between the length and the width of the rectangle, in feet

D. The width of the rectangle, in feet

ID: f89af023

A rectangular volleyball court has an area of 162 square meters. If the length of the court is twice the width, what is the width of the court, in meters?

A. 9

B. 18

C. 27

D. 54

ID: e53add44

$S(n) = 38{,}000a^n$

The function S above models the annual salary, in dollars, of an employee n years after starting a job, where a is a constant. If the employee's salary increases by 4% each year, what is the value of a ?

A. 0.04

B. 0.4

C. 1.04

D. 1.4

ID: 926c246b

$D = 5{,}640(1.9)^t$

The equation above estimates the global data traffic D, in terabytes, for the year that is t years after 2010. What is the best interpretation of the number 5,640 in this context?

A. The estimated amount of increase of data traffic, in terabytes, each year

B. The estimated percent increase in the data traffic, in terabytes, each year

C. The estimated data traffic, in terabytes, for the year that is t years after 2010

D. The estimated data traffic, in terabytes, in 2010

ID: 341ba5db

$$g(x) = x^2 + 55$$

What is the minimum value of the given function?

A. 0

B. 55

C. 110

D. $3{,}025$

ID: 50e40f08

$$f(x) = (x + 6)(x - 4)$$

If the given function f is graphed in the *xy*-plane, where $y = f(x)$, what is the *x*-coordinate of an *x*-intercept of the graph?

ID: be0c419e

Immanuel purchased a certain rare coin on January 1. The function $f(x) = 65(1.03)^x$, where $0 \leq x \leq 10$, gives the predicted value, in dollars, of the rare coin x years after Immanuel purchased it. What is the best interpretation of the statement "$f(8)$ is approximately equal to 82" in this context?

A. When the rare coin's predicted value is approximately 82 dollars, it is 8% greater than the predicted value, in dollars, on January 1 of the previous year.

B. When the rare coin's predicted value is approximately 82 dollars, it is 8 times the predicted value, in dollars, on January 1 of the previous year.

C. From the day Immanuel purchased the rare coin to 8 years after Immanuel purchased the coin, its predicted value increased by a total of approximately 82 dollars.

D. 8 years after Immanuel purchased the rare coin, its predicted value is approximately 82 dollars.

ID: a31417d1

From 2005 through 2014, the number of music CDs sold in the United States declined each year by approximately 15% of the number sold the preceding year. In 2005, approximately 600 million CDs were sold in the United States. Of the following, which best models C, the number of millions of CDs sold in the United States, t years after 2005?

A. $C = 600(0.15)^t$

B. $C = 600(0.85)^t$

C. $C = 600(1.15)^t$

D. $C = 600(1.85)^t$

ID: 6ecdbcb4

$$f(x) = (x + 6)(x + 5)(x - 4)$$

The function f is given. Which table of values represents $y = f(x) - 3$?

A.

x	y
-6	-9
-5	-8
4	1

B.

x	y
-6	-3
-5	-3
4	-3

C.

x	y
-6	-3
-5	-2
4	7

D.

x	y
-6	3
-5	3
4	3

ID: 203774bc

The product of two positive integers is 546. If the first integer is 11 greater than twice the second integer, what is the smaller of the two integers?

A. 7

B. 14

C. 39

D. 78

ID: c4cd5bcc

In the *xy*-plane, the *y*-coordinate of the *y*-intercept of the graph of the function *f* is *c*.
Which of the following must be equal to *c* ?

A. $f(0)$

B. $f(1)$

C. $f(2)$

D. $f(3)$

ID: 735a0a00

$$y = 0.25x^2 - 7.5x + 90.25$$

The equation gives the estimated stock price y, in dollars, for a certain company x days after a new product launched, where $0 \leq x \leq 20$. Which statement is the best interpretation of $(x, y) = (1, 83)$ in this context?

A. The company's estimated stock price increased $\$83$ every day after the new product launched.

B. The company's estimated stock price increased $\$1$ every 83 days after the new product launched.

C. 1 day after the new product launched, the company's estimated stock price is $\$83$.

D. 83 days after the new product launched, the company's estimated stock price is $\$1$.

ID: 78d5f91a

$f(x)=x^3+3x^2-6x-1$

For the function *f* defined above, what is the value of $f(-1)$?

A. -11

B. -7

C. 7

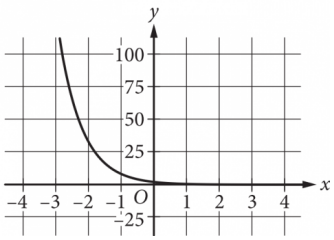
D. 11

ID: d675744f

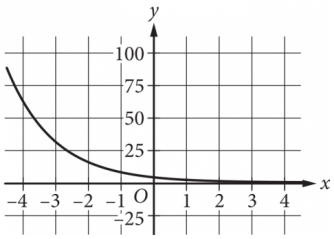
$y = 4(2^x)$

Which of the following is the graph in the *xy*-plane of the given equation?

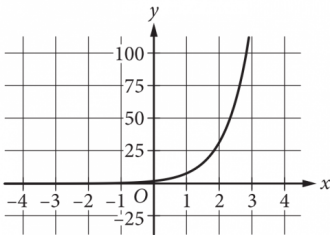
A.



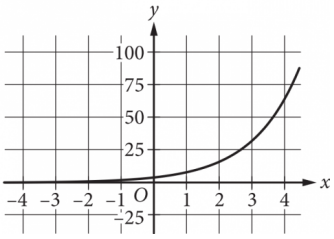
B.



C.



D.



ID: 67f4b449

The function $f(w) = 6w^2$ gives the area of a rectangle, $\textbf{in square feet } (\text{ft}^2)$, if its width is w ft and its length is 6 times its width. Which of the following is the best interpretation of $f(14) = 1{,}176$?

A. If the width of the rectangle is 14 ft, then the area of the rectangle is $1{,}176$ ft^2.

B. If the width of the rectangle is 14 ft, then the length of the rectangle is $1{,}176$ ft.

C. If the width of the rectangle is $1{,}176$ ft, then the length of the rectangle is 14 ft.

D. If the width of the rectangle is $1{,}176$ ft, then the area of the rectangle is 14 ft^2.

ID: f44a29a8

An object's kinetic energy, in joules, is equal to the product of one-half the object's mass, in kilograms, and the square of the object's speed, in meters per second. What is the speed, in meters per second, of an object with a mass of 4 kilograms and kinetic energy of 18 joules?

A. 3

B. 6

C. 9

D. 36

ID: d71f6dbf

The height, in feet, of an object x seconds after it is thrown straight up in the air can be modeled by the function $h(x) = -16x^2 + 20x + 5$. Based on the model, which of the following statements best interprets the equation $h(1.4) = 1.64$?

A. The height of the object 1.4 seconds after being thrown straight up in the air is 1.64 feet.

B. The height of the object 1.64 seconds after being thrown straight up in the air is 1.4 feet.

C. The height of the object 1.64 seconds after being thrown straight up in the air is approximately 1.4 times as great as its initial height.

D. The speed of the object 1.4 seconds after being thrown straight up in the air is approximately 1.64 feet per second.

ID: 6676f055

$f(\theta) = -0.28(\theta - 27)^2 + 880$

An engineer wanted to identify the best angle for a cooling fan in an engine in order to get the greatest airflow. The engineer discovered that the function above models the airflow $f(\theta)$, in cubic feet per minute, as a function of the angle of the fan θ, in degrees. According to the model, what angle, in degrees, gives the greatest airflow?

A. −0.28

B. 0.28

C. 27

D. 880

ID: dd8ac009

Time (years)	Total amount (dollars)
0	670.00
1	674.02
2	678.06

Sara opened a savings account at a bank. The table shows the exponential relationship between the time t, in years, since Sara opened the account and the total amount d, in dollars, in the account. If Sara made no additional deposits or withdrawals, which of the following equations best represents the relationship between t and d?

A. $d = 0.006$msup

B. $d = 670$msup

C. $d =$ msup

D. $d =$ msup

ID: 281a4f3b

A certain college had 3,000 students enrolled in 2015. The college predicts that after 2015, the number of students enrolled each year will be 2% less than the number of students enrolled the year before. Which of the following functions models the relationship between the number of students enrolled, $f(x)$, and the number of years after 2015, x ?

A. $f(x) = 0.02(3{,}000)^x$

B. $f(x) = 0.98(3{,}000)^x$

C. $f(x) = 3{,}000(0.02)^x$

D. $f(x) = 3{,}000(0.98)^x$

ID: 100030d9

A rubber ball bounces upward one-half the height that it falls each time it hits the ground. If the ball was originally dropped from a distance of 20.0 feet above the ground, what was its maximum height above the ground, in feet, between the third and fourth time it hit the ground?

ID: c7a187a7

$$f(x) = x^2 - 18x - 360$$

If the given function f is graphed in the *xy*-plane, where $y = f(x)$, what is an *x*-intercept of the graph?

A. $(-12, 0)$

B. $(-30, 0)$

C. $(-360, 0)$

D. $(12, 0)$

ID: a26c29f7

The function f is defined by $f(x) = 7x^3$. In the *xy*-plane, the graph of $y = g(x)$ is the result of shifting the graph of $y = f(x)$ down 2 units. Which equation defines function g?

A. $g(x) = \frac{7}{2}x^3$

B. $g(x) = 7x^{\frac{3}{2}}$

C. $g(x) = 7x^3 + 2$

D. $g(x) = 7x^3 - 2$

ID: e1391dd6

According to Moore's law, the number of transistors included on microprocessors doubles every 2 years. In 1985, a microprocessor was introduced that had 275,000 transistors. Based on this information, in which of the following years does Moore's law estimate the number of transistors to reach 1.1 million?

A. 1987

B. 1989

C. 1991

D. 1994

ID: 4209aefe

The function $f(x) = 206(1.034)^x$ models the value, in dollars, of a certain bank account by the end of each year from 1957 through 1972, where x is the number of years after 1957. Which of the following is the best interpretation of "$f(5)$ is approximately equal to 243" in this context?

A. The value of the bank account is estimated to be approximately 5 dollars greater in 1962 than in 1957.

B. The value of the bank account is estimated to be approximately 243 dollars in 1962.

C. The value, in dollars, of the bank account is estimated to be approximately 5 times greater in 1962 than in 1957.

D. The value of the bank account is estimated to increase by approximately 243 dollars every 5 years between 1957 and 1972.

ID: 5bf0f84a

$h(t) = -16t^2 + 110t + 72$

The function above models the height h, in feet, of an object above ground t seconds after being launched straight up in the air. What does the number 72 represent in the function?

A. The initial height, in feet, of the object

B. The maximum height, in feet, of the object

C. The initial speed, in feet per second, of the object

D. The maximum speed, in feet per second, of the object

ID: 70ebd3d0

$N(d) = 115(0.90)^d$

The function N defined above can be used to model the number of species of brachiopods at various ocean depths d, where d is in hundreds of meters. Which of the following does the model predict?

A. For every increase in depth by 1 meter, the number of brachiopod species decreases by 115.

B. For every increase in depth by 1 meter, the number of brachiopod species decreases by 10%.

C. For every increase in depth by 100 meters, the number of brachiopod species decreases by 115.

D. For every increase in depth by 100 meters, the number of brachiopod species decreases by 10%.

ID: 97158b3a

The area *A*, in square centimeters, of a rectangular painting can be represented by the expression $w(w + 29)$, where w is the width, in centimeters, of the painting. Which expression represents the length, in centimeters, of the painting?

A. w

B. 29

C. $(w + 29)$

D. $w(w + 29)$

ID: dba7432e

x	$f(x)$
0	5
1	$\frac{5}{2}$
2	$\frac{5}{4}$
3	$\frac{5}{8}$

The table above gives the values of the function f for some values of x. Which of the following equations could define f?

A. $f(x) = 5(2^{x+1})$

B. $f(x) = 5(2^{x})$

C. $f(x) = 5(2^{-(x+1)})$

D. $f(x) = 5(2^{-x})$

ID: b7cd6ca6

The equation $E(t) = 5(1.8)^t$ gives the estimated number of employees at a restaurant, where t is the number of years since the restaurant opened. Which of the following is the best interpretation of the number 5 in this context?

A. The estimated number of employees when the restaurant opened

B. The increase in the estimated number of employees each year

C. The number of years the restaurant has been open

D. The percent increase in the estimated number of employees each year

ID: f5e8ccf1

$f(x) = (x+4)(x-1)(2x-3)$

The function f is defined above. Which of the following is NOT an x-intercept of the graph of the function in the xy-plane?

A. $(-4, 0)$

B. $\left(-\frac{2}{3}, 0\right)$

C. $(1, 0)$

D. $\left(\frac{3}{2}, 0\right)$

ID: 981aca65

$$f(x) = \frac{a-19}{x} + 5$$

In the given function f, a is a constant. The graph of function f in the *xy*-plane, where $y = f(x)$, is translated 3 units down and 4 units to the right to produce the graph of $y = g(x)$. Which equation defines function g?

A. $g(x) = \frac{a-19}{x+4} + 2$

B. $g(x) = \frac{a-19}{x-4} + 2$

C. $g(x) = \frac{a-22}{x+4} + 5$

D. $g(x) = \frac{a-22}{x-4} + 5$

ID: 5c00c2c1

There were no jackrabbits in Australia before 1788 when 24 jackrabbits were introduced. By 1920 the population of jackrabbits had reached 10 billion. If the population had grown exponentially, this would correspond to a 16.2% increase, on average, in the population each year. Which of the following functions best models the population $p(t)$ of jackrabbits t years after 1788?

A. $p(t) = 1.162(24)^t$

B. $p(t) = 24(2)^{1.162t}$

C. $p(t) = 24(1.162)^t$

D. $p(t) = (24 \cdot 1.162)^t$

ID: dd4ab4c4

$4a^2+20ab+25b^2$

Which of the following is a factor of the polynomial above?

A. $a+b$

B. $2a+5b$

C. $4a+5b$

D. $4a+25b$

ID: b8caaf84

If $p = 3x + 4$ and $v = x + 5$, which of the following is equivalent to $pv - 2p + v$?

A. $3x^2 + 12x + 7$

B. $3x^2 + 14x + 17$

C. $3x^2 + 19x + 20$

D. $3x^2 + 26x + 33$

ID: 52931bfa

Which expression is equivalent to $\frac{8x(x-7)-3(x-7)}{2x-14}$, where $x > 7$?

A. $\frac{x-7}{5}$

B. $\frac{8x-3}{2}$

C. $\frac{8x^2-3x-14}{2x-14}$

D. $\frac{8x^2-3x-77}{2x-14}$

ID: ad2ec615

Which of the following is equivalent to the expression $x^4 - x^2 - 6$?

A. $(x^2+1)(x^2-6)$

B. $(x^2+2)(x^2-3)$

C. $(x^2+3)(x^2-2)$

D. $(x^2+6)(x^2-1)$

ID: 42c71eb5

$(2x+5)^2-(x-2)+2(x+3)$

Which of the following is equivalent to the expression above?

A. $4x^2+21x+33$

B. $4x^2+21x+29$

C. $4x^2+x+29$

D. $4x^2+x+33$

ID: a05bd3a4

Which of the following expressions is equivalent to x^2-5 ?

A. $(x+\sqrt{5})^2$

B. $(x-\sqrt{5})^2$

C. $(x+\sqrt{5})(x-\sqrt{5})$

D. $(x+5)(x-1)$

ID: cc776a04

Which of the following is an equivalent form of $(1.5x-2.4)^2-(5.2x^2-6.4)$?

A. $-2.2x^2+1.6$

B. $-2.2x^2+11.2$

C. $-2.95x^2-7.2x+12.16$

D. $-2.95x^2-7.2x+0.64$

ID: a520ba07

$\sqrt[3]{x^3y^6}$

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

A. y^2

B. xy^2

C. y^3

D. xy^3

ID: 5b6af6b1

Which expression is equivalent to $(d-6)(8d^2-3)$?

A. $8d^3-14d^2-3d+18$

B. $8d^3-17d^2+48$

C. $8d^3-48d^2-3d+18$

D. $8d^3-51d^2+48$

ID: a255ae72

If $x^2 = a + b$ and $y^2 = a + c$, which of the following is equal to $(x^2 - y^2)^2$?

A. $a^2 - 2ac + c^2$

B. $b^2 - 2bc + c^2$

C. $4a^2 - 4abc + c^2$

D. $4a^2 - 2abc + b^2c^2$

ID: 463eec13

If $x \neq 0$, which of the following expressions is equivalent to $\frac{\sqrt{16x^4y^8}}{x^3}$?

A. $8x^2y^4$

B. $4xy^4$

C. $4x^{-2}y^2$

D. $4x^{-1}y^4$

ID: a1bf1c4e

$x^2 + 6x + 4$

Which of the following is equivalent to the expression above?

A. $(x + 3)^2 + 5$

B. $(x + 3)^2 - 5$

C. $(x - 3)^2 + 5$

D. $(x - 3)^2 - 5$

ID: 5805e747

Which expression is equivalent to $\left(7x^3+7x\right)-\left(6x^3-3x\right)$?

A. x^3+10x

B. $-13x^3+10x$

C. $-13x^3+4x$

D. x^3+4x

ID: 26eb61c1

Which expression is equivalent to $6x^8y^2 + 12x^2y^2$?

A. $6x^2y^2(2x^6)$

B. $6x^2y^2(x^4)$

C. $6x^2y^2(x^6 + 2)$

D. $6x^2y^2(x^4 + 2)$

ID: 42f19012

Which expression is equivalent to $a^{\frac{11}{12}}$, where $a > 0$?

A. $\sqrt[12]{a^{132}}$

B. $\sqrt[144]{a^{132}}$

C. $\sqrt[121]{a^{132}}$

D. $\sqrt[11]{a^{132}}$

ID: f237ccfc

The sum of $-2x^2+x+31$ and $3x^2+7x-8$ can be written in the form ax^2+bx+c, where *a*, *b*, and *c* are constants. What is the value of $a+b+c$?

ID: a391ed22

$$\left(\frac{1}{2}x+\frac{3}{2}\right)\left(\frac{3}{2}x+\frac{1}{2}\right)$$

The expression above is equivalent to ax^2+bx+c, where a, b, and c are constants. What is the value of b?

ID: c3a72da5

Which of the following is equivalent to the sum of $3x^4+2x^3$ and $4x^4+7x^3$?

A. $16x^{14}$

B. $7x^8+9x^6$

C. $12x^4+14x^3$

D. $7x^4+9x^3$

ID: 16de54c7

$2x^2+5x-12$

If the given expression is rewritten in the form $(2x-3)(x+k)$, where k is a constant, what is the value of k?

ID: d9137a84

Which expression represents the product of $\left(x^{-6}y^{3}z^{5}\right)$ and $\left(x^{4}z^{5}+y^{8}z^{-7}\right)$?

A. $x^{-2}z^{10}+y^{11}z^{-2}$

B. $x^{-2}z^{10}+x^{-6}z^{-2}$

C. $x^{-2}y^{3}z^{10}+y^{8}z^{-7}$

D. $x^{-2}y^{3}z^{10}+x^{-6}y^{11}z^{-2}$

ID: 3e9cc0c2

Which of the following is equivalent to $(1-p)(1+p+p^2+p^3+p^4+p^5+p^6)$?

A. $1-p^8$

B. $1-p^7$

C. $1-p^6$

D. $1-p^5$

ID: 7348f046

$(2x+3)-(x-7)$

Which of the following is equivalent to the given expression?

A. $x-4$

B. $3x-4$

C. $x+10$

D. $2x^2+21$

ID: b47419f4

$\left(\frac{1}{2}x+3\right)-\left(\frac{2}{3}x-5\right)$

Which of the following is equivalent to the expression above?

A. $-\frac{1}{6}x+8$

B. $-\frac{1}{6}x-2$

C. $-\frac{1}{3}x^2+\frac{1}{2}x+15$

D. $-\frac{1}{3}x^2-\frac{9}{2}x-15$

ID: 8838a672

$(4x^3-5x^2+3)-(6x^3+2x^2-x)$

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

A. $-10x^3-3x^2+x+3$

B. $-2x^3-7x^2+x+3$

C. $-2x^3-3x^2+x+3$

D. $10x^3-7x^2-x+3$

ID: 0b3d25c5

Which of the following is equivalent to $\sqrt[4]{x^2+8x+16}$, where $x>0$?

A. $(x+4)^4$

B. $(x+4)^2$

C. $(x+4)$

D. $(x+4)^{\frac{1}{2}}$

ID: c602140f

$(x-11y)(2x-3y)-12y(-2x+3y)$

Which of the following is equivalent to the expression above?

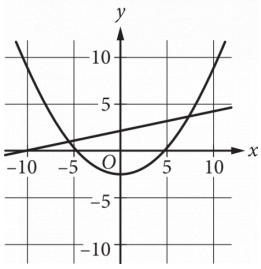
A. $x-23y$

B. $2x^2-xy-3y^2$

C. $2x^2+24xy+36y^2$

D. $2x^2-49xy+69y^2$

ID: a5663025



A system of equations consists of a quadratic equation and a linear equation. The equations in this system are graphed in the *xy*-plane above. How many solutions does this system have?

A. 0

B. 1

C. 2

D. 3

ID: d0a7871e

$y = x + 1$

$y = x^2 + x$

If (x, y) is a solution to the system of equations above, which of the following could be the value of x ?

A. −1

B. 0

C. 2

D. 3

ID: 7f81d0c3

$x^2 - x - 1 = 0$

What values satisfy the equation above?

A. $x = 1$ and $x = 2$

B. $x = -\frac{1}{2}$ and $x = \frac{3}{2}$

C. $x = \frac{1+\sqrt{5}}{2}$ and $x = \frac{1-\sqrt{5}}{2}$

D. $x = \frac{-1+\sqrt{5}}{2}$ and $x = \frac{-1-\sqrt{5}}{2}$

ID: ff2c1431

$$7m = 5(n + p)$$

The given equation relates the positive numbers m, n, and p. Which equation correctly gives n in terms of m and p?

A. $n = \frac{5p}{7m}$

B. $n = \frac{7m}{5} - p$

C. $n = 5(7m) + p$

D. $n = 7m - 5 - p$

ID: 911383f2

$(x-4)(x+2)(x-1)=0$

What is the product of the solutions to the given equation?

A. 8

B. 3

C. -3

D. -8

ID: b80d10d7

$$\frac{2(x+1)}{x+5} = 1 - \frac{1}{x+5}$$

What is the solution to the equation above?

A. 0

B. 2

C. 3

D. 5

ID: fcdf87b7

$$y = x^2 - 4x + 4$$
$$y = 4 - x$$

If the ordered pair (x, y) satisfies the system of equations above, what is one possible value of x ?

ID: 652054da

An oceanographer uses the equation $s = \frac{3}{2}p$ to model the speed s, in knots, of an ocean wave, where p represents the period of the wave, in seconds. Which of the following represents the period of the wave in terms of the speed of the wave?

A. $p = \frac{2}{3}s$

B. $p = \frac{3}{2}s$

C. $p = \frac{2}{3} + s$

D. $p = \frac{3}{2} + s$

ID: 6e02cd78

In the *xy*-plane, what is the *y*-coordinate of the point of intersection of the graphs of $y = (x-1)^2$ and $y = 2x - 3$?

ID: 802549ac

$(x+2)(x+3)=(x-2)(x-3)+10$

Which of the following is a solution to the given equation?

A. 1

B. 0

C. -2

D. -5

ID: a4f61d75

$$x^2 - ax + 12 = 0$$

In the equation above, *a* is a constant and $a > 0$. If the equation has two integer solutions, what is a possible value of *a* ?

ID: 062f86db

$$5x^2 - 37x - 24 = 0$$

What is the positive solution to the given equation?

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

B. 3

C. 8

D. 37

ID: 717a1964

$$z^2 + 10z - 24 = 0$$

What is one of the solutions to the given equation?

ID: 630897df

The speed of sound in dry air, v, can be modeled by the formula $v = 331.3 + 0.606T$, where T is the temperature in degrees Celsius and v is measured in meters per second. Which of the following correctly expresses T in terms of v?

A. $T = \frac{v + 0.606}{331.3}$

B. $T = \frac{v - 0.606}{331.3}$

C. $T = \frac{v + 331.3}{0.606}$

D. $T = \frac{v - 331.3}{0.606}$

ID: c77ef2fb

Blood volume, V_B, in a human can be determined using the equation $V_B = \frac{V_P}{1-H}$, where V_P is the plasma volume and H is the hematocrit (the fraction of blood volume that is red blood cells). Which of the following correctly expresses the hematocrit in terms of the blood volume and the plasma volume?

A. $H = 1 - \frac{V_P}{V_B}$

B. $H = \frac{V_B}{V_P}$

C. $H = 1 + \frac{V_B}{V_P}$

D. $H = V_B - V_P$

ID: 5ae186b4

$$\frac{-54}{w} = 6$$

What is the solution to the given equation?

ID: 364a2d25

$$x + y = 17$$
$$xy = 72$$

If one solution to the system of equations above is (x, y), what is one possible value of x ?

ID: 0980fcdd

$$x^2 = 6x + y$$
$$y = -6x + 36$$

A solution to the given system of equations is (x, y). Which of the following is a possible value of xy ?

A. 0

B. 6

C. 12

D. 36

ID: 87a3de81

$x^2+x-12=0$

If *a* is a solution of the equation above and $a>0$, what is the value of *a*?

ID: 2683b5db

$T = 0.01(P - 40{,}000)$

In a city, the property tax T, in dollars, is calculated using the formula above, where P is the value of the property, in dollars. Which of the following expresses the value of the property in terms of the property tax?

A. $P = 100T - 400$

B. $P = 100T + 400$

C. $P = 100T - 40{,}000$

D. $P = 100T + 40{,}000$

ID: 2f958af9

$$v^2 = \frac{LT}{m}$$

The formula above expresses the square of the speed v of a wave moving along a string in terms of tension T, mass m, and length L of the string. What is T in terms of m, v, and L ?

A. $T = \frac{mv^2}{L}$

B. $T = \frac{m}{v^2 L}$

C. $T = \frac{mL}{v^2}$

D. $T = \frac{L}{mv^2}$

ID: 876a731c

$y = x^2$
$2y + 6 = 2(x + 3)$

If (x, y) is a solution of the system of equations above and $x > 0$, what is the value of xy ?

A. 1

B. 2

C. 3

D. 9

ID: 928498f3

$6x^2+5x-7=0$

What are the solutions to the given equation?

A. $\frac{-5\pm\sqrt{25+168}}{12}$

B. $\frac{-6\pm\sqrt{25+168}}{12}$

C. $\frac{-5\pm\sqrt{36-168}}{12}$

D. $\frac{-6\pm\sqrt{36-168}}{12}$

ID: e8779461

$$y = x^2 + 14x + 48$$
$$x + 8 = 11$$

The solution to the given system of equations is (x, y). What is the value of y?

ID: 2d2ab76b

$y = x^2 - 1$

$y = 3$

When the equations above are graphed in the *xy*-plane, what are the coordinates (*x*, *y*) of the points of intersection of the two graphs?

A. $(2,3)$ and $(-2,3)$

B. $(2,4)$ and $(-2,4)$

C. $(3,8)$ and $(-3,8)$

D. $(\sqrt{2},3)$ and $(-\sqrt{2},3)$

ID: 3b4b8831

$$38x^2 = 38(9)$$

What is the negative solution to the given equation?

ID: f5247e52

$y = ax^2 - c$

In the equation above, *a* and *c* are positive constants. How many times does the graph of the equation above intersect the graph of the equation $y = a + c$ in the *xy*-plane?

A. Zero

B. One

C. Two

D. More than two