Algebra Quick-Quiz-03312022

Question 1

If $y \neq 0$, which of the following is equivalent to the expression below?

$$\frac{15y^9}{5y^3}$$

A. $3y^3$
B. $3y^6$
C. $10y^3$
D. $10y^6$

Question 2

Which statement best describes the solutions of a two-variable equation?

(1) The ordered pairs must lie on the graphed equation.
(2) The ordered pairs must lie near the graphed equation.
(3) The ordered pairs must have $x = 0$ for one coordinate.
(4) The ordered pairs must have $y = 0$ for one coordinate.

Question 3.

Which expression is *not* equivalent to $-4x^3 + x^2 - 6x + 8$?

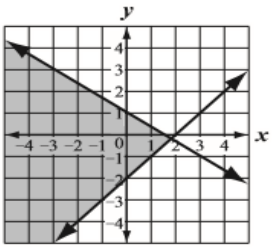
(1) $x^2(-4x + 1) - 2(3x - 4)$
(2) $x(-4x^2 - x + 6) + 8$
(3) $-4x^3 + (x - 2)(x - 4)$
(4) $-4(x^3 - 2) + x(x - 6)$

Question 4.
I am depending on you to be real honest here.
Do NOT use your graphing calculator or
Desmos to solve this question.

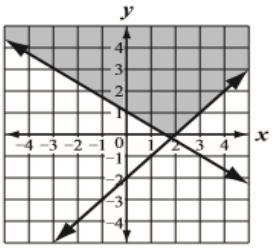
4 Which of the following graphs represents the solution of the system of inequalities below?

$$y \geq x - 2$$
$$y \leq -\frac{2}{3}x + 1$$

A.



B.



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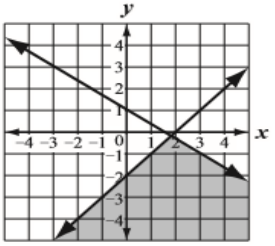

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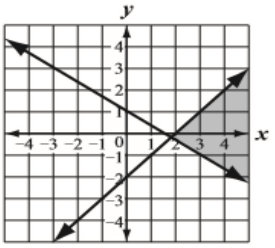
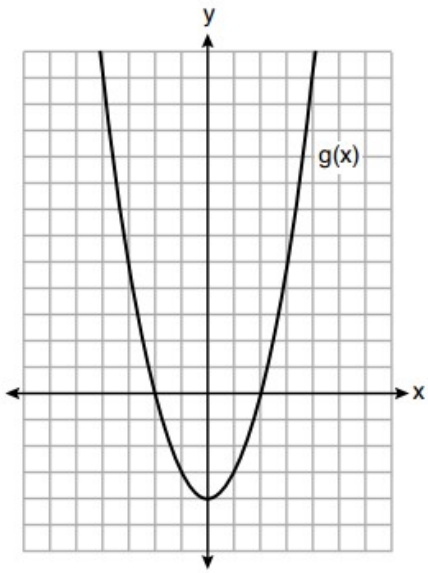


Question 5.

Which statement is true about the functions $f(x)$ and $g(x)$, given below?



$f(x) = -x^2 - 4x - 4$

(1) The minimum value of $g(x)$ is greater than the maximum value of $f(x)$.

(2) $f(x)$ and $g(x)$ have the same y-intercept.

(3) $f(x)$ and $g(x)$ have the same roots.

(4) $f(x) = g(x)$ when $x = -4$.

Question 6.

The equation $V(t) = 12{,}000(0.75)^t$ represents the value of a motorcycle t years after it was purchased. Which statement is true?

(1) The motorcycle cost \$9000 when purchased.

(2) The motorcycle cost \$12,000 when purchased.

(3) The motorcycle's value is decreasing at a rate of 75% each year.

(4) The motorcycle's value is decreasing at a rate of 0.25% each year.

Question 7.

The solutions to $(x + 4)^2 - 2 = 7$ are

(1) $-4 \pm \sqrt{5}$

(2) $4 \pm \sqrt{5}$

(3) -1 and -7

(4) 1 and 7

Question 8.

Which situation could be modeled as a linear equation?

(1) The value of a car decreases by 10% every year.

(2) The number of fish in a lake doubles every 5 years.

(3) Two liters of water evaporate from a pool every day.

(4) The amount of caffeine in a person's body decreases by $\frac{1}{3}$ every 2 hours.

Question 9.

Which system of equations has the same solutions as the system below?

$$3x - y = 7$$
$$2x + 3y = 12$$

(1) $6x - 2y = 14$
$-6x + 9y = 36$

(2) $18x - 6y = 42$
$4x + 6y = 24$

(3) $-9x - 3y = -21$
$2x + 3y = 12$

(4) $3x - y = 7$
$x + y = 2$

Question 10.

A population of paramecia, P, can be modeled using the exponential function $P(t) = 3(2)^t$, where t is the number of days since the population was first observed. Which domain is most appropriate to use to determine the population over the course of the first two weeks?

(1) $t \geq 0$

(2) $t \leq 2$

(3) $0 \leq t \leq 2$

(4) $0 \leq t \leq 14$

Question 11a

State whether the product of $\sqrt{3}$ and $\sqrt{9}$ is rational or irrational. Explain your answer.

Question 11b.

A chef is making 20 pounds of fruit salad to sell in his shop. The chef will use only grapes and blueberries in the fruit salad.

Let x and y be defined as follows:

- x = the number of pounds of grapes the chef will use
- y = the number of pounds of blueberries the chef will use

a. Write an equation in terms of x and y that can be used to represent the total number of pounds of fruit salad the chef will make.

Grapes cost \$2.50 per pound, and blueberries cost \$4.00 per pound. The chef spent a total of \$59.00 for grapes and blueberries for the fruit salad.

b. Write an equation in terms of x and y that can be used to represent the total cost, in dollars, of the fruit salad.

c. Use your answers from parts (a) and (b) to determine the number of pounds of grapes **and** the number of pounds of blueberries the chef will use to make the fruit salad. Show or explain how you got your answer.