

## Algebra Quick Quiz 01142020

### Question 1.

Which statement is *not* always true?

- (1) The product of two irrational numbers is irrational.
- (2) The product of two rational numbers is rational.
- (3) The sum of two rational numbers is rational.
- (4) The sum of a rational number and an irrational number is irrational.

## Question 2

A satellite television company charges a one-time installation fee and a monthly service charge. The total cost is modeled by the function  $y = 40 + 90x$ . Which statement represents the meaning of each part of the function?

- (1)  $y$  is the total cost,  $x$  is the number of months of service, \$90 is the installation fee, and \$40 is the service charge per month.
- (2)  $y$  is the total cost,  $x$  is the number of months of service, \$40 is the installation fee, and \$90 is the service charge per month.
- (3)  $x$  is the total cost,  $y$  is the number of months of service, \$40 is the installation fee, and \$90 is the service charge per month.
- (4)  $x$  is the total cost,  $y$  is the number of months of service, \$90 is the installation fee, and \$40 is the service charge per month.

## Question 3.

If  $4x^2 - 100 = 0$ , the roots of the equation are

- |                    |                  |
|--------------------|------------------|
| (1) $-25$ and $25$ | (3) $-5$ and $5$ |
| (2) $-25$ , only   | (4) $-5$ , only  |

### Question 4.

Which point is *not* on the graph represented by  $y = x^2 + 3x - 6$ ?

- (1)  $(-6, 12)$
- (2)  $(-4, -2)$
- (3)  $(2, 4)$
- (4)  $(3, -6)$

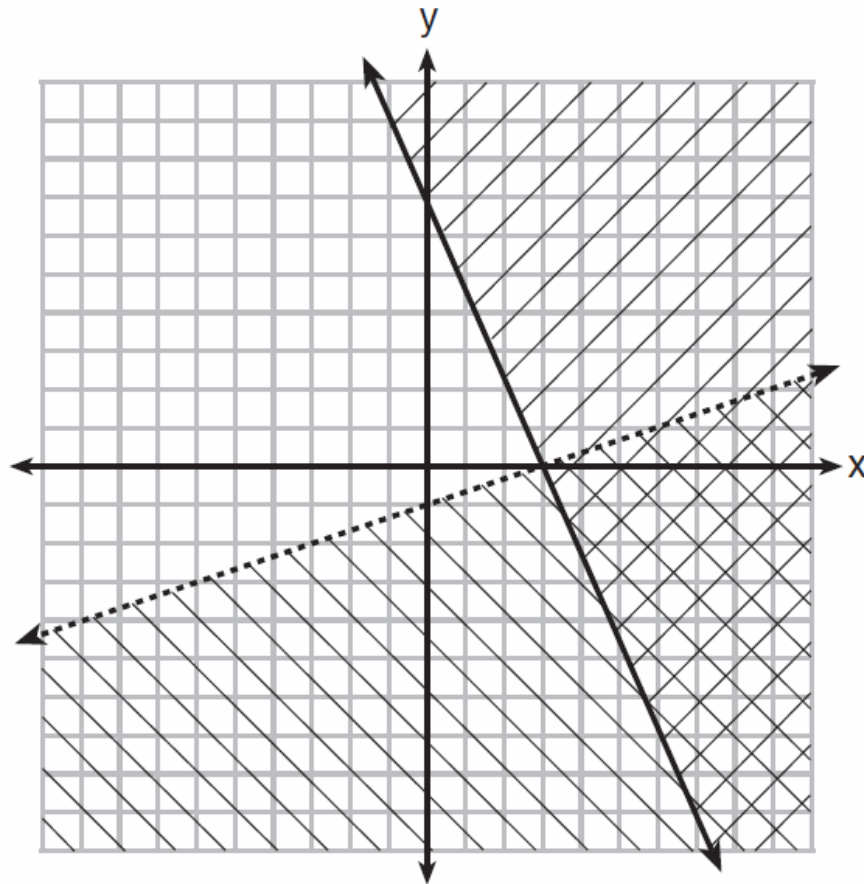
### Question 5.

A company produces  $x$  units of a product per month, where  $C(x)$  represents the total cost and  $R(x)$  represents the total revenue for the month. The functions are modeled by  $C(x) = 300x + 250$  and  $R(x) = -0.5x^2 + 800x - 100$ . The profit is the difference between revenue and cost where  $P(x) = R(x) - C(x)$ . What is the total profit,  $P(x)$ , for the month?

- (1)  $P(x) = -0.5x^2 + 500x - 150$
- (2)  $P(x) = -0.5x^2 + 500x - 350$
- (3)  $P(x) = -0.5x^2 - 500x + 350$
- (4)  $P(x) = -0.5x^2 + 500x + 350$

Question 6.

What is one point that lies in the solution set of the system of inequalities graphed below?



(1) (7,0)

(2) (3,0)

(3) (0,7)

(4) (-3,5)

Question 7.

The value of the  $x$ -intercept for the graph of  $4x - 5y = 40$  is

(1) 10

(3)  $-\frac{4}{5}$

(2)  $\frac{4}{5}$

(4)  $-8$

Question 8.

Sam and Jeremy have ages that are consecutive odd integers. The product of their ages is 783. Which equation could be used to find Jeremy's age,  $j$ , if he is the younger man?

(1)  $j^2 + 2 = 783$

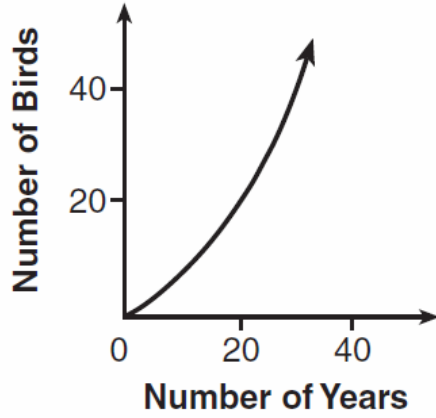
(3)  $j^2 + 2j = 783$

(2)  $j^2 - 2 = 783$

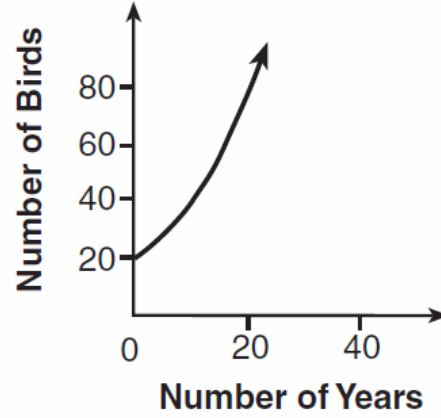
(4)  $j^2 - 2j = 783$

### Question 9.

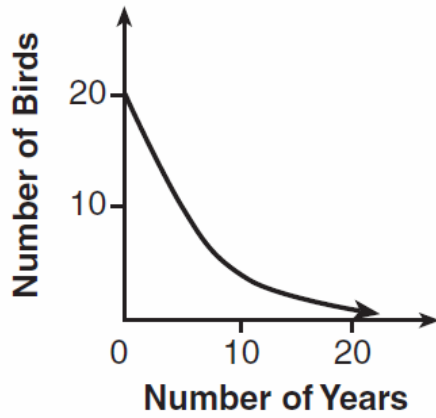
A population that initially has 20 birds approximately doubles every 10 years. Which graph represents this population growth?



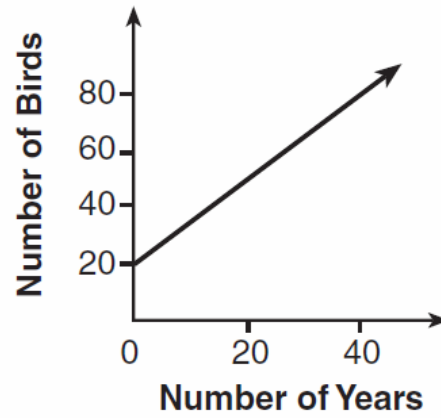
(1)



(3)



(2)



(4)

## Question 10.

Let  $f$  be a function such that  $f(x) = 2x - 4$  is defined on the domain  $2 \leq x \leq 6$ . The range of this function is

(1)  $0 \leq y \leq 8$

(3)  $2 \leq y \leq 6$

(2)  $0 \leq y < \infty$

(4)  $-\infty < y < \infty$

## Bonus Question

### Question 11

a) Given the function  $f(x) = -x^2 + 8x + 9$ , state whether the vertex represents a maximum or minimum point for the function. Explain your answer.

b) Rewrite  $f(x)$  in vertex form by completing the square.