

# Algebra Quick Quiz 03032020

## Question 1

For what value of  $m$  is the equation true?

$$x^2 + 10x + 11 = m + (x + 5)^2 - 25$$

## Question 2

A student claims that there is no solution to the system of inequalities shown.

$$\begin{cases} y \geq x^2 + 3 \\ y < \frac{x}{2} + 1 \end{cases}$$

- Explain a method for proving that the student's claim is correct.
- Identify a single change that could be made to the system of inequalities so that it does have a solution set. Explain your answer.
- Give an ordered pair that would be part of the solution that results from your change.

## Question 3.

Let  $x$  and  $y$  represent natural numbers. Prove that the following equation is true for all  $x$  and  $y$  values. Show your work or explain your answer.

$$(x^2 + y^2)^2 - (x^2 - y^2)^2 = (2xy)^2$$

## Question 4.

What are the zeros of the polynomial  $x(x^2 + 4x - 12)$ ?

Indicate **all** zeros.

- A. -12
- B. -6
- C. -3
- D. -2
- E. 0
- F. 2
- G. 6
- H. 12

## Question 5. and Question 6.

The function  $f$  is defined as  $f(x) = x(x^2 - 4) - 3x(x - 2)$ .

### Part A

An equivalent form of  $f$  is given as  $f(x) = x(x - 2)(x - a)$ , where  $a$  is a constant. What is the value of  $a$ ?

Enter your answer in the box.

$a =$

### Part B

Which values are the zeros of the function  $f$ ?

Select **all** that apply.

- A.  $-3$
- B.  $-2$
- C.  $-1$
- D.  $0$
- E.  $1$
- F.  $2$
- G.  $3$

### Question 7.

Which expression is equivalent to  $162x^4 - 144x^2 + 32$ ?

Select **all** that apply.

- A.  $2(81x^2 - 72x + 16)$
- B.  $2(81x^2 + 4)(81x^2 + 4)$
- C.  $2(81x^2 - 4)(81x^2 + 4)$
- D.  $2(9x^2 - 4)(9x^2 - 4)$
- E.  $2(9x^2 + 4)(9x^2 + 4)$
- F.  $2(3x + 2)^2(3x - 2)^2$

### Question 8.

Multiply:  $(a + b)(a - b)$

a.  $a^2 + 2ab - b^2$

b.  $a^2 + b^2$

c.  $a^2 - b^2$

d.  $a^2 - 2ab - b^2$

Question 9.

Simplify  $y^{10} \cdot y^5$ .

a.  $y^2$

b.  $y^5$

c.  $y^{15}$

d.  $y^{50}$

Question 10.

Solve  $7(x - 2) = 7x + 14$ .

a. no solution

b. 0

c. 2

d. all real numbers

Bonus Question

Non today

Question 11