Algebra Quick Quiz 03122020

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.

$$\left(x^2 + y^2\right)^2 - \left(x^2 - y^2\right)^2 = (2xy)^2$$

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 $f(x) = x\left(x^2 - 4\right) - 3x(x - 2)$.

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