Algebra 1 Quick-Quiz-12092024

Question 1.

Albert drew the line represented by this equation on a coordinate plane.

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

On the same coordinate plane, Penny drew a line that is perpendicular to Albert's line **and** passes through the point (−4, 3). Which of the following equations represents Penny's line?

Ⓐ $y = 2x + 5$

Ⓑ $y = 2x + 11$

Ⓒ $y = -2x - 5$

Ⓓ $y = -2x - 11$

Question 2

This equation represents the ideal gas law, where T is the temperature.

$$PV = nRT$$

Which equation has been correctly rearranged to solve for T?

Ⓐ $T = nR - PV$

Ⓑ $T = PV - nR$

Ⓒ $T = \frac{nR}{PV}$

Ⓓ $T = \frac{PV}{nR}$

Question 3.

When using the method of completing the square, which equation is equivalent to $x^2 - 12x - 10 = 0$?

(1) $(x + 6)^2 = -26$

(2) $(x + 6)^2 = 46$

(3) $(x - 6)^2 = -26$

(4) $(x - 6)^2 = 46$

Question 4.

Consider this expression.

$$1.8 + \sqrt{1.8}$$

Which of the following statements about the expression is true?

Ⓐ The expression is rational because one of the terms is rational.

Ⓑ The expression is irrational because one of the terms is irrational.

Ⓒ The expression is rational because both of the terms are rational.

Ⓓ The expression is irrational because both of the terms are irrational.

Question 5.

The number of loaves of bread remaining in a restaurant h hours after opening for the day can be modeled by this function.

$$L(h) = 42 - 3.5h$$

What is the domain of the function?

Ⓐ $0 \le h \le 12$

Ⓑ $0 \le h \le 38.5$

Ⓒ $0 \le h \le 42$

Ⓓ $0 \le h \le 45.5$

Question 6.

Consider this function.

$$f(x) = x^2 + 1$$

Which of the following expressions is equivalent to $f(m + 2)$?

Ⓐ $m^2 + 3$

Ⓑ $m^2 + 5$

Ⓒ $m^2 + 4m + 4$

Ⓓ $m^2 + 4m + 5$

Question 7.

When solving $x^2 - 10x - 13 = 0$ by completing the square, which equation is a step in the process?

(1) $(x - 5)^2 = 38$

(2) $(x - 5)^2 = 12$

(3) $(x - 10)^2 = 38$

(4) $(x - 10)^2 = 12$

Question 8.

The number of customers doing business with a landscaping company each week, over t weeks since the beginning of last summer, can be modeled by this function.

$$f(t) = 21 + 4t$$

Based on the function, which of the following statements is true?

Ⓐ The number of customers increased by 21 per week.

Ⓑ The number of customers decreased by a factor of 4.

Ⓒ The company began last summer with 21 customers.

Ⓓ The company had a total of 21 customers after 4 weeks.

Question 9.

A toy rocket is launched from the ground straight upward. The height of the rocket above the ground, in feet, is given by the equation $h(t) = -16t^2 + 64t$, where t is the time in seconds. Determine the domain for this function in the given context. Explain your reasoning.

Which expression is equivalent to $x^2 + 5x - 6$?

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

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

(3) $(x - 6)(x + 1)$

(4) $(x + 6)(x - 1)$

Question 10.

When completing the square for $x^2 - 18x + 77 = 0$, which equation is a correct step in this process?

(1) $(x - 9)^2 = 4$

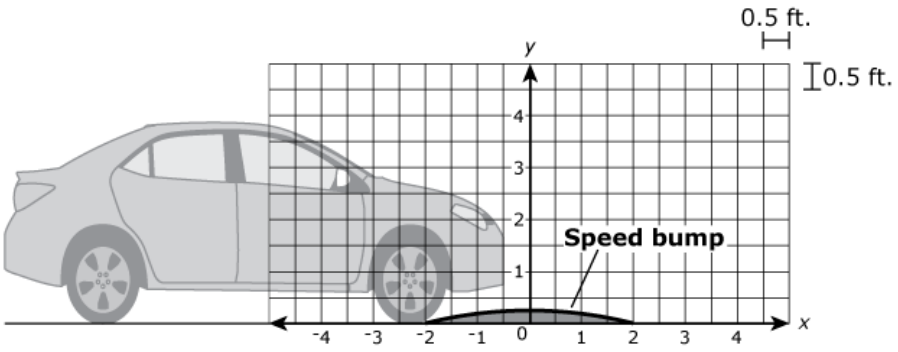
(2) $(x - 3)^2 = 2$

(3) $x = \pm 13$

(4) $x - 9 = \pm 9$

Bonus Question
Question 11

A cross-sectional view of a speed bump is represented on this coordinate plane.



The curve created by the speed bump on the graph is modeled by this quadratic function.

$$f(x) = -0.0625x^2 + 0.25$$

In the function, x and $f(x)$ represent measurements, in feet, at different locations along the surface of the speed bump.

Calculate the value of $f(0)$ **and** describe what the value represents.

Select from the drop-down menus to correctly complete the sentence.

The value of $f(0)$ is [Choose...], which represents the maximum [Choose..] in feet, of the speed bump.

Part A: The value of f(0) is (A) 0.625 (B) 0.25 (C) 4

Part B: which represents the maximum (A) width or (B) height in feet, of the speed bump.