Algebra quick quiz 06072022

Question 1.

When solving the equation $x^2 - 8x - 7 = 0$ by completing the square, which equation is a step in the process?

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

(2) $(x - 4)^2 = 23$

(3) $(x - 8)^2 = 9$

(4) $(x - 8)^2 = 23$

Question 2

Given the graph of the line represented by the equation $f(x) = -2x + b$, if b is increased by 4 units, the graph of the new line would be shifted 4 units

(1) right

(2) up

(3) left

(4) down

Question 3.

Rowan has \$50 in a savings jar and is putting in \$5 every week. Jonah has \$10 in his own jar and is putting in \$15 every week. Each of them plots his progress on a graph with time on the horizontal axis and amount in the jar on the vertical axis. Which statement about their graphs is true?

(1) Rowan's graph has a steeper slope than Jonah's.

(2) Rowan's graph always lies above Jonah's.

(3) Jonah's graph has a steeper slope than Rowan's.

(4) Jonah's graph always lies above Rowan's.

Question 4.

To watch a varsity basketball game, spectators must buy a ticket at the door. The cost of an adult ticket is \$3.00 and the cost of a student ticket is \$1.50. If the number of adult tickets sold is represented by a and student tickets sold by s, which expression represents the amount of money collected at the door from the ticket sales?

(1) $4.50as$

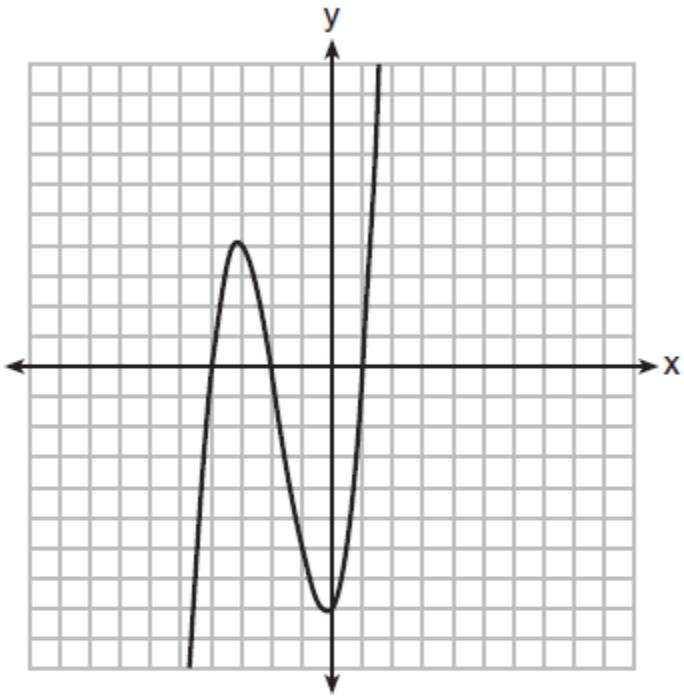
(2) $4.50(a + s)$

(3) $(3.00a)(1.50s)$

(4) $3.00a + 1.50s$

Question 5.

The graph of $f(x)$ is shown below.



Which function could represent the graph of $f(x)$?

(1) $f(x) = (x + 2)(x^2 + 3x - 4)$

(2) $f(x) = (x - 2)(x^2 + 3x - 4)$

(3) $f(x) = (x + 2)(x^2 + 3x + 4)$

(4) $f(x) = (x - 2)(x^2 + 3x + 4)$

Question 6.

The cost of a pack of chewing gum in a vending machine is \$0.75. The cost of a bottle of juice in the same machine is \$1.25. Julia has \$22.00 to spend on chewing gum and bottles of juice for her team and she must buy seven packs of chewing gum. If b represents the number of bottles of juice, which inequality represents the maximum number of bottles she can buy?

(1) $0.75b + 1.25(7) \geq 22$

(2) $0.75b + 1.25(7) \leq 22$

(3) $0.75(7) + 1.25b \geq 22$

(4) $0.75(7) + 1.25b \leq 22$

Question 7.

Four expressions are shown below.

I $2(2x^2 - 2x - 60)$

II $4(x^2 - x - 30)$

III $4(x + 6)(x - 5)$

IV $4x(x - 1) - 120$

The expression $4x^2 - 4x - 120$ is equivalent to

(1) I and II, only

(2) II and IV, only

(3) I, II, and IV

(4) II, III, and IV

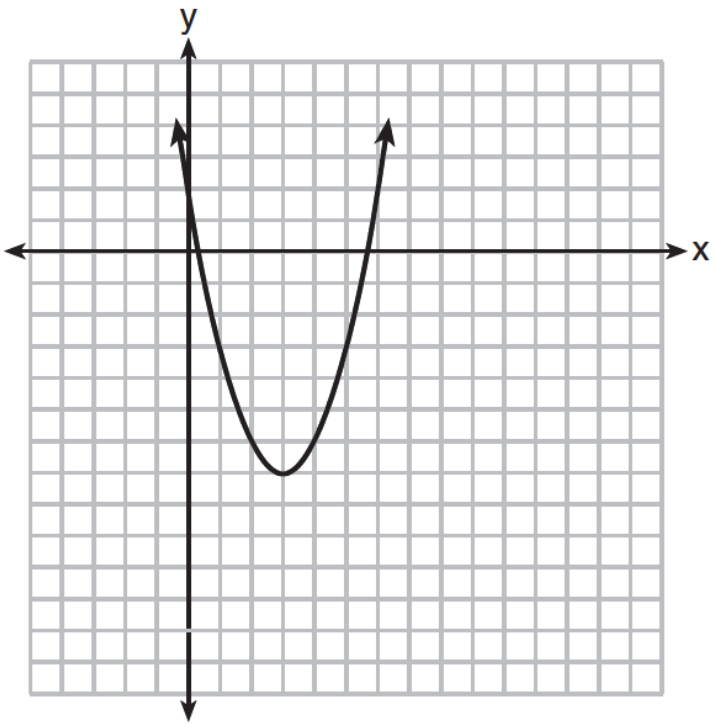
Question 8.

Let $h(t) = -16t^2 + 64t + 80$ represent the height of an object above the ground after t seconds. Determine the number of seconds it takes to achieve its maximum height. Justify your answer.

State the time interval, in seconds, during which the height of the object *decreases*. Explain your reasoning.

Question 9.

The graph representing a function is shown below.



Which function has a minimum that is *less* than the one shown in the graph?

(1) $y = x^2 - 6x + 7$

(2) $y = |x + 3| - 6$

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

(4) $y = |x - 8| + 2$

Question 10.

Joe has a rectangular patio that measures 10 feet by 12 feet. He wants to increase the area by 50% and plans to increase each dimension by equal lengths, x. Which equation could be used to determine x?

(1) $(10 + x)(12 + x) = 120$

(2) $(10 + x)(12 + x) = 180$

(3) $(15 + x)(18 + x) = 180$

(4) $(15)(18) = 120 + x^2$

Bonus Question

Question 11

A contractor has 48 meters of fencing that he is going to use as the perimeter of a rectangular garden. The length of one side of the garden is represented by x, and the area of the garden is 108 square meters.

Determine, algebraically, the dimensions of the garden in meters.