

Answer on Question #56098 – Math -- Algebra

8. Which function will produce the same graph as the function shown below?
 $y = (x + 1)(x + 3)$ Multiple answers may be correct.

$$y + 3 = x(x - 1)$$

$$y = x^2 + 4x + 3$$

$$y = x^2 + 4x - 3$$

$$y - 3 = (x - 1)^2$$

Solution

$$y = (x + 1)(x + 3) = x^2 + 3x + x + 3 = x^2 + 4x + 3.$$

Answer: 2. $y = x^2 + 4x + 3$

9. What is the equation on the axis of symmetry for the function shown below?
 $y - 1 = -2(x + 3)^2$. There can be multiple right answers.

$$x = 3$$

$$y = 7$$

$$x = -2$$

$$x = -3$$

Solution

The axis of symmetry of a parabola is the vertical line through the vertex. For a parabola in the vertex form

$$y = a(x - h)^2 + k$$

vertex has coordinates $(h; k) = (-3; 1)$.

Then the axis of symmetry has the equation $x = -3$.

For a parabola in standard form $y = ax^2 + bx + c$ the axis of symmetry has the equation $x = -\frac{b}{2a}$.

Answer: 4. $x = -3$.

10. Which point lies on the graph of the function shown below?

$$y = x^2 + 4x - 2$$

A: (1,1)

B: (2,-2)

C: (-1,3)

D: (0,2)

Solution

$$y(1) = -1^2 + 4 \cdot 1 - 2 = 1.$$

Answer: A: (1,1).

11. Which function represents a translation of the graph of $y = x^2$ by 5 units to the left. Multiple answers may be correct check all that apply.

$$y = x^2 + 5$$

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

$$y = 5x^2$$

$$y = (x + 5)^2$$

Solution

If you have $y_1 = (x + 5)^2$, the graph of $y_2 = x^2$ gets moved to the left 5 units. It is a horizontal shift.

Answer: 4. $y = (x + 5)^2$.