



2-2 Reteach to Build Understanding

Standard Form of a Quadratic Function

1. What is the graph of $f(x) = 2x^2 - 8x + 5$? Fill in the blanks.

$a = 2$; $b = \underline{\hspace{2cm}}$; $c = \underline{\hspace{2cm}}$

Find the equation of the axis of symmetry. $x = -\frac{b}{2a} = \frac{-(-8)}{2(\quad)} = \frac{\quad}{4} = 2$

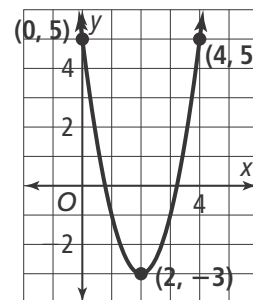
Find the x -coordinate of the vertex: $-\frac{b}{2a} = \underline{\hspace{2cm}}$

Find the y -value when $x = 2$. $f(x) = (2)^2 - 8(2) + 5$
 $= \underline{\hspace{2cm}} + 5 = -3$

y -coordinate of vertex: -3 The vertex is $(2, \underline{\hspace{2cm}})$.

y -intercept: $(0, \underline{\hspace{2cm}})$ The y -intercept is at $(0, c) = (0, \underline{\hspace{2cm}})$.

Because a is positive, the graph opens upward, and the vertex is at the bottom of the graph. Plot the vertex and draw the axis of symmetry. Plot $(0, 5)$ and its corresponding point on the other side of the axis of symmetry.



2. Abby found the axis of symmetry, x -coordinate, the vertex, and y -intercept of the equation $f(x) = -x^2 - 8x - 15$. Find and explain Abby's errors.

axis of symmetry $x = -4$

x -coordinate of vertex $x = -4$

vertex: $(4, -31)$

y -intercept $(0, -15)$

3. Solve the following equation which is in standard form and find the key features:

$f(x) = 2x^2 + 8x - 3$ (partial solution)

a. Find the equation of the axis of symmetry. $x = -\frac{b}{2a} = \frac{-8}{2(2)} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

b. Find the x -coordinate of the vertex: $-\frac{b}{2a} = \underline{\hspace{2cm}}$

c. Find the y -value when $x = 2$. $f(x) = 2x^2 - 8x - 3$
 $f(2) = 2(2)^2 - 8(2) - 3$
 $= \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

d. y -coordinate of vertex: -11 The vertex is $(\underline{\hspace{2cm}}, \underline{\hspace{2cm}})$.

e. The y -intercept is at $(0, c) = (\underline{\hspace{2cm}}, \underline{\hspace{2cm}})$.