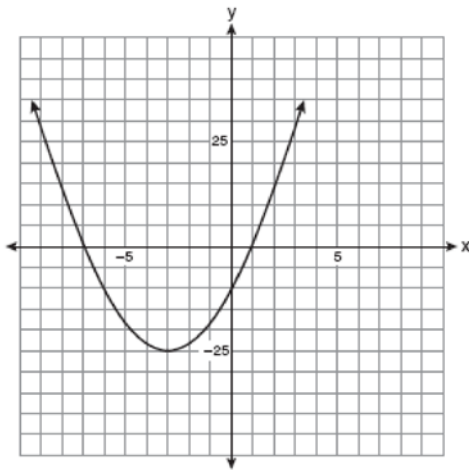


F.IF.B.4: Graphing Quadratic Functions 1a

1 Which point is *not* on the graph represented by $y = x^2 + 3x - 6$?

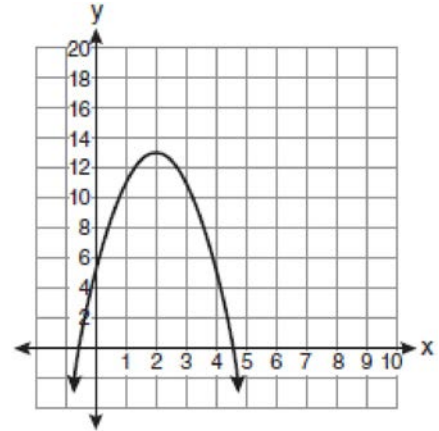
- 1) $(-6, 12)$
- 2) $(-4, -2)$
- 3) $(2, 4)$
- 4) $(3, -6)$

2 Which equation represents the axis of symmetry of the graph of the parabola below?



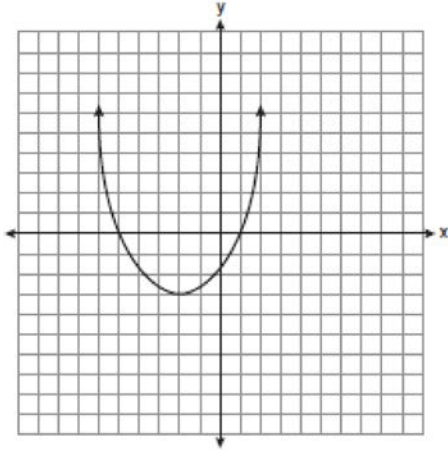
- 1) $y = -3$
- 2) $x = -3$
- 3) $y = -25$
- 4) $x = -25$

3 What is the equation of the axis of symmetry of the parabola shown in the diagram below?



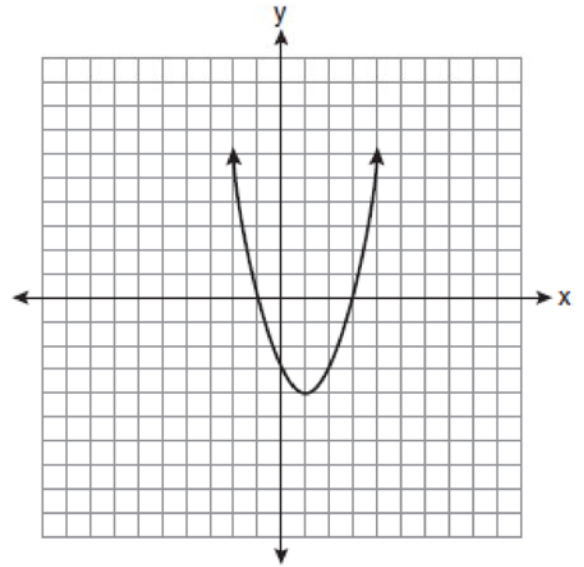
- 1) $x = -0.5$
- 2) $x = 2$
- 3) $x = 4.5$
- 4) $x = 13$

4 What are the vertex and the axis of symmetry of the parabola shown in the diagram below?



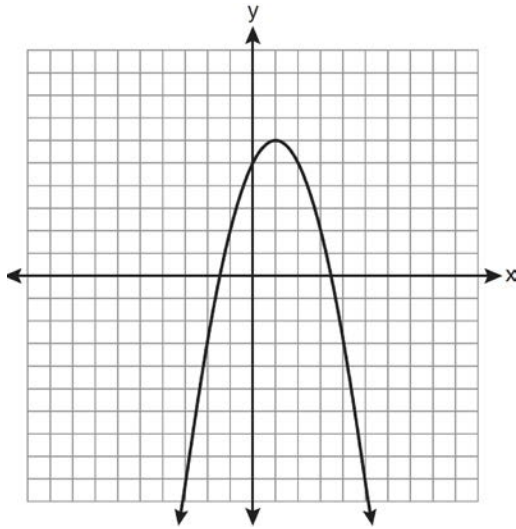
- 1) The vertex is $(-2, -3)$, and the axis of symmetry is $x = -2$.
- 2) The vertex is $(-2, -3)$, and the axis of symmetry is $y = -2$.
- 3) The vertex is $(-3, -2)$, and the axis of symmetry is $y = -2$.
- 4) The vertex is $(-3, -2)$, and the axis of symmetry is $x = -2$.

5 What are the vertex and axis of symmetry of the parabola shown in the diagram below?



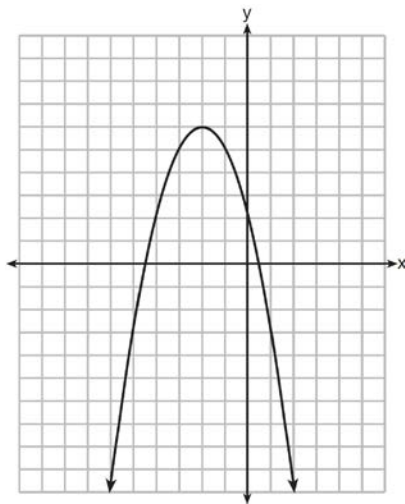
- 1) vertex: $(1, -4)$; axis of symmetry: $x = 1$
- 2) vertex: $(1, -4)$; axis of symmetry: $x = -4$
- 3) vertex: $(-4, 1)$; axis of symmetry: $x = 1$
- 4) vertex: $(-4, 1)$; axis of symmetry: $x = -4$

6 What are the vertex and the axis of symmetry of the parabola shown in the graph below?



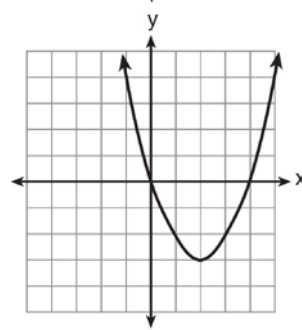
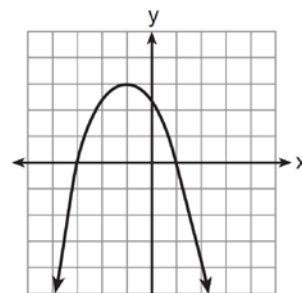
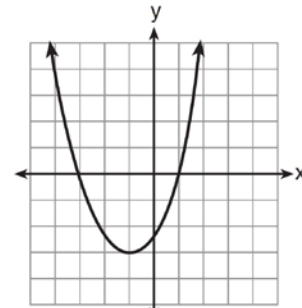
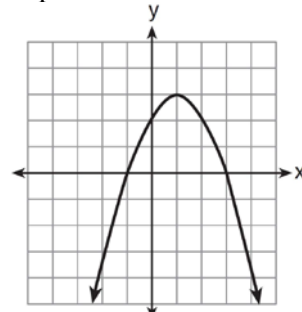
- 1) vertex: (1,6); axis of symmetry: $y = 1$
- 2) vertex: (1,6); axis of symmetry: $x = 1$
- 3) vertex: (6,1); axis of symmetry: $y = 1$
- 4) vertex: (6,1); axis of symmetry: $x = 1$

7 What are the coordinates of the vertex and the equation of the axis of symmetry of the parabola shown in the graph below?

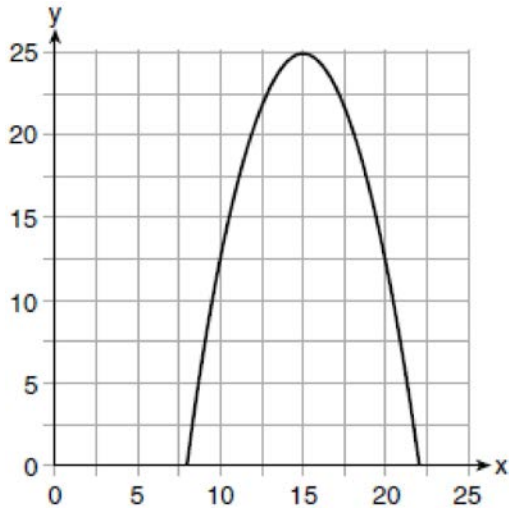


- 1) (0,2) and $y = 2$
- 2) (0,2) and $x = 2$
- 3) (-2,6) and $y = -2$
- 4) (-2,6) and $x = -2$

8 Which parabola has an axis of symmetry of $x = 1$?



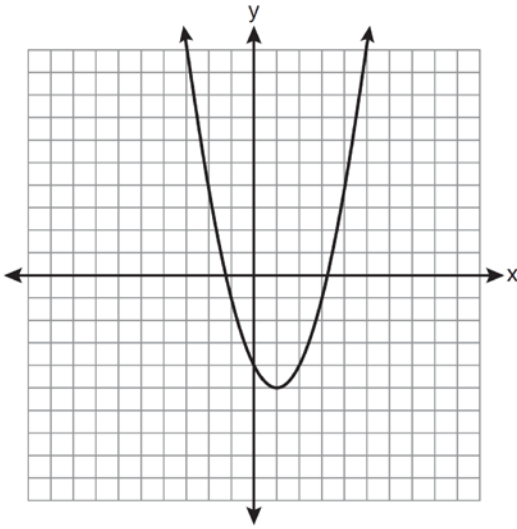
- 9 The graph of a quadratic function is shown below.



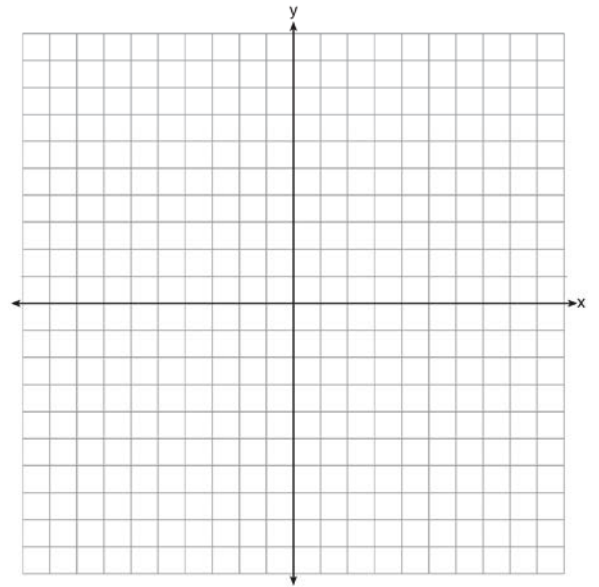
An equation that represents the function could be

- 1) $q(x) = \frac{1}{2}(x + 15)^2 - 25$
 - 2) $q(x) = -\frac{1}{2}(x + 15)^2 - 25$
 - 3) $q(x) = \frac{1}{2}(x - 15)^2 + 25$
 - 4) $q(x) = -\frac{1}{2}(x - 15)^2 + 25$
- 10 What are the vertex and axis of symmetry of the parabola $y = x^2 - 16x + 63$?
- 1) vertex: $(8, -1)$; axis of symmetry: $x = 8$
 - 2) vertex: $(8, 1)$; axis of symmetry: $x = 8$
 - 3) vertex: $(-8, -1)$; axis of symmetry: $x = -8$
 - 4) vertex: $(-8, 1)$; axis of symmetry: $x = -8$
- 11 What is an equation of the axis of symmetry of the parabola represented by $y = -x^2 + 6x - 4$?
- 1) $x = 3$
 - 2) $y = 3$
 - 3) $x = 6$
 - 4) $y = 6$
- 12 The equation of the axis of symmetry of the graph of $y = 2x^2 - 3x + 7$ is
- 1) $x = \frac{3}{4}$
 - 2) $y = \frac{3}{4}$
 - 3) $x = \frac{3}{2}$
 - 4) $y = \frac{3}{2}$
- 13 What is the vertex of the parabola represented by the equation $y = -2x^2 + 24x - 100$?
- 1) $x = -6$
 - 2) $x = 6$
 - 3) $(6, -28)$
 - 4) $(-6, -316)$
- 14 The vertex of the parabola $y = x^2 + 8x + 10$ lies in Quadrant
- 1) I
 - 2) II
 - 3) III
 - 4) IV
- 15 What is the vertex of the graph of the equation $y = 3x^2 + 6x + 1$?
- 1) $(-1, -2)$
 - 2) $(-1, 10)$
 - 3) $(1, -2)$
 - 4) $(1, 10)$
- 16 Which equation represents the axis of symmetry of the graph of the equation $y = x^2 + 4x - 5$?
- 1) $x = -2$
 - 2) $x = 4$
 - 3) $y = -2$
 - 4) $y = 4$
- 17 The axis of symmetry and the vertex of $y = x^2 - 4x + 10$ are
- 1) $x = 2$ and $(2, 6)$
 - 2) $y = 2$ and $(2, 6)$
 - 3) $y = -2$ and $(-2, 6)$
 - 4) $x = -2$ and $(-2, 6)$

- 18 Find algebraically the equation of the axis of symmetry and the coordinates of the vertex of the parabola whose equation is $y = -2x^2 - 8x + 3$.
- 19 Find algebraically the equation of the axis of symmetry and the vertex of the parabola represented by the equation $y = -x^2 - 2x + 1$.
- 20 State the equation of the axis of symmetry and the coordinates of the vertex of the parabola graphed below.

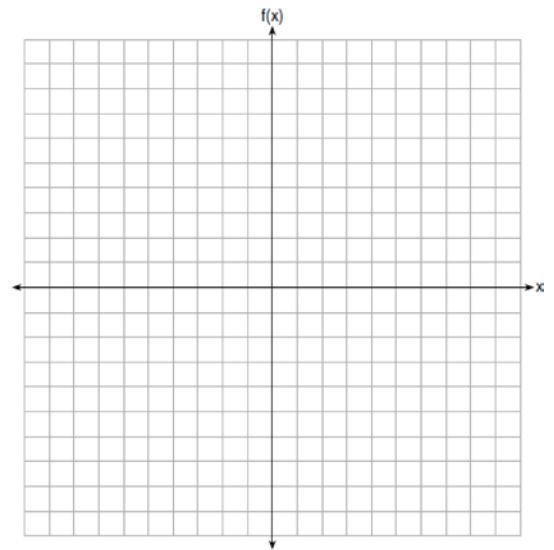


- 21 On the set of axes below, draw the graph of $y = x^2 - 4x - 1$.



State the equation of the axis of symmetry.

- 22 Graph the function $f(x) = -x^2 - 6x$ on the set of axes below.



State the coordinates of the vertex of the graph.

F.IF.B.4: Graphing Quadratic Functions 1a

Answer Section

1 ANS: 4 REF: 081405ai

2 ANS: 2 REF: 010916ia

3 ANS: 2 REF: 011015ia

4 ANS: 1 REF: 060811ia

5 ANS: 1 REF: 061005ia

6 ANS: 2 REF: 081111ia

7 ANS: 4 REF: 081214ia

8 ANS: 1 REF: 061420ia

9 ANS: 4

Vertex (15,25), point (10,12.5) $12.5 = a(10 - 15)^2 + 25$

$$-12.5 = 25a$$

$$-\frac{1}{2} = a$$

REF: 061716ai

10 ANS: 1

$$x = \frac{-b}{2a} = \frac{-(-16)}{2(1)} = 8. \quad y = (8)^2 - 16(8) + 63 = -1$$

REF: 060918ia

11 ANS: 1

$$x = \frac{-b}{2a} = \frac{-6}{2(-1)} = 3.$$

REF: 011127ia

12 ANS: 1

$$x = \frac{-b}{2a} = \frac{-(-3)}{2(2)} = \frac{3}{4}.$$

REF: 011219ia

13 ANS: 3

$$x = \frac{-b}{2a} = \frac{-24}{2(-2)} = 6. \quad y = -2(6)^2 + 24(6) - 100 = -28$$

REF: 061214ia

14 ANS: 3

$$x = \frac{-b}{2a} = \frac{-8}{2(1)} = -4. \quad y = (-4)^2 + 8(-4) + 10 = -6. \quad (-4, -6)$$

REF: 011314ia

15 ANS: 1

$$x = \frac{-b}{2a} = \frac{-6}{2(3)} = -1. \quad y = 3(-1)^2 + 6(-1) + 1 = -2$$

REF: 011416ia

16 ANS: 1

$$x = \frac{-b}{2a} = \frac{-4}{2(1)} = -2$$

REF: 011520ia

17 ANS: 1

$$x = \frac{-b}{2a} = \frac{-(-4)}{2(1)} = 2$$

REF: 061614ia

18 ANS:

$$\begin{aligned} (-2, 11). \quad x &= \frac{-b}{2a} = \frac{-(-8)}{2(-2)} = -2 \\ y &= -2(-2)^2 - 8(-2) + 3 = 11 \end{aligned}$$

REF: 080934ia

19 ANS:

$$x = \frac{-(-2)}{2(-1)} = \frac{2}{-2} = -1 \quad y = -(-1)^2 - 2(-1) + 1 = -1 + 2 + 1 = 2 \quad x = -1 \quad (-1, 2)$$

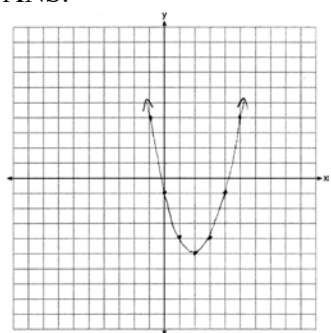
REF: 061534ia

20 ANS:

$$x = 1; (1, -5)$$

REF: 061133ia

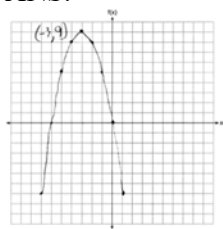
21 ANS:



$$x = \frac{-b}{2a} = \frac{-(-4)}{2(1)} = \frac{4}{2} = 2$$

REF: 061627ai

22 ANS:



REF: 061726ai