

Graphing Quadratic Equations

Linear Equation: equations with an exponent of one. Graphs are _____.

Standard Form $y = mx + b$

Quadratic Equations: equations with an exponent of two (squared). Graphs are _____.

Standard Form $y = ax^2 + bx + c$

Opening up _____

Opening down (flipped) _____

Write the quadratic equation in standard form and determine if the graph opens up or down.

1.) $y = 2x^2 + x - 1$

2.) $y = 3 - x - x^2$

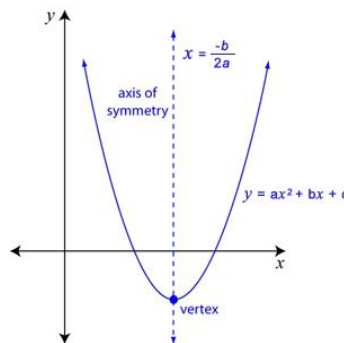
3.) $y = -3x^2 + 1 - 4x$

4.) $y = 4 - 3x^2$

5.) $y = x + 9x^2$

6.) $y = 3x^2 + 5x^2 - 3x + 2$

Vertex: the lowest or the highest point of the graph



Axis of Symmetry: the vertical line through the vertex

Axis of Symmetry and x-coordinate of the vertex

$$x = -\frac{b}{2a}$$

Find the axis of symmetry of the parabola.

7.) $y = 2x^2 + 4x - 1$

8.) $y = -x^2 + 2x + 5$

9.) $y = 3x^2 - 5$

x = _____

x = _____

x = _____

Find the vertex of the parabola. Find x using formula and then plug it back into equation to find y.

10.) $y = x^2 + 2x - 1$

11.) $y = -x^2 + 4$

12.) $y = 2x^2 + 4x$

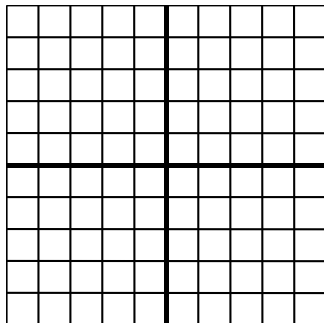
Graph the following quadratic equations. Find the axis of symmetry and the vertex.

13. $y = x^2 - 2x + 3$

$x =$ _____

Vertex: _____

Point: _____

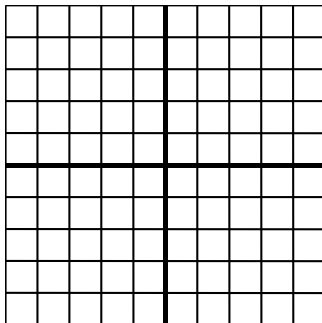


14. $y = x^2 + 5x - 6$

$x =$ _____

Vertex: _____

Point: _____

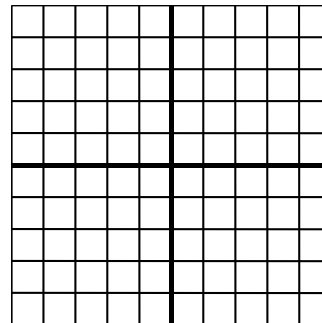


15. $y = -x^2 + 4x - 2$

$x =$ _____

Vertex: _____

Point: _____



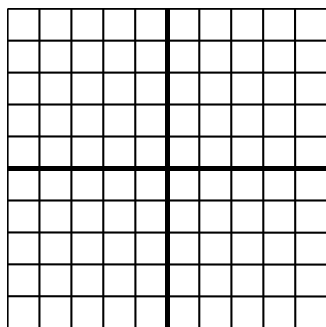
Standard Form: Practice Problems: pg 253 #20-25

20.) $y = x^2 - 2x - 1$

$x =$ _____

Vertex: _____

Point: _____

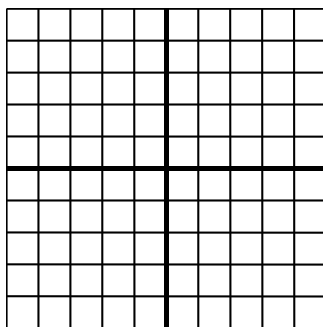


21.) $y = 2x^2 - 12x + 19$

$x =$ _____

Vertex: _____

Point: _____

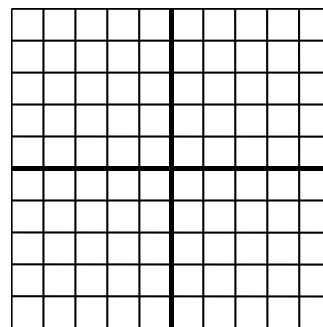


22.) $y = -x^2 + 4x - 2$

$x =$ _____

Vertex: _____

Point: _____

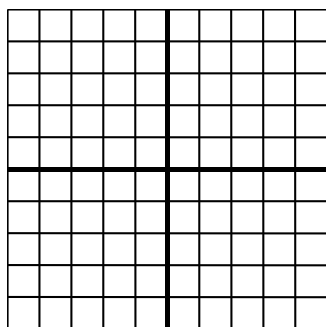


23.) $y = -3x^2 + 5$

$x =$ _____

Vertex: _____

Point: _____

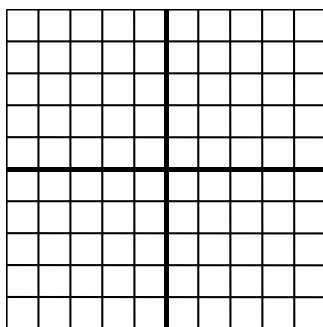


24.) $y = \frac{1}{2}x^2 + 4x + 5$

$x =$ _____

Vertex: _____

Point: _____

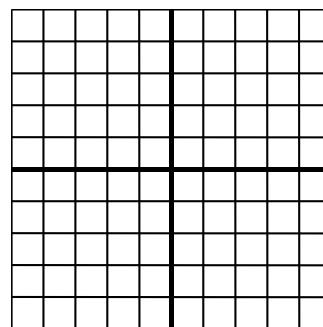


25.) $y = -\frac{1}{6}x^2 - x - 3$

$x =$ _____

Vertex: _____

Point: _____



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

Opening up _____

Opening down (flipped) _____

Determine if the graph opens up or down.

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

2.) $y = 3(x + 2)^2 - 5$

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

Axis of Symmetry and x-coordinate of the vertex
 $x = h$

Intercept Form Vertex: (h, k)

Find the axis of symmetry of the parabola.

4.) $y = 2(x - 5)^2 + 3$

5.) $y = -4(x)^2 - 5$

6.) $y = 7(x + 9)^2 + 2$

x = _____

x = _____

x = _____

Find the vertex of the parabola (h, k) .

7.) $y = (x - 3)^2 + 3$

8.) $y = \frac{1}{2}(x - 6)^2$

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

Graph the following quadratic equations. Find the axis of symmetry and the vertex.

10. $y = (x - 2)^2 + 1$

11. $y = 3(x + 3)^2 + 2$

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

x = _____

x = _____

x = _____

Vertex: _____

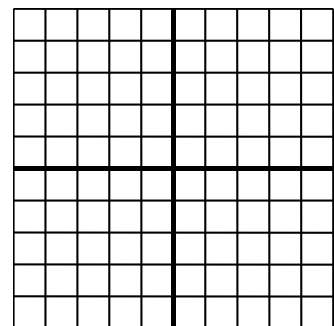
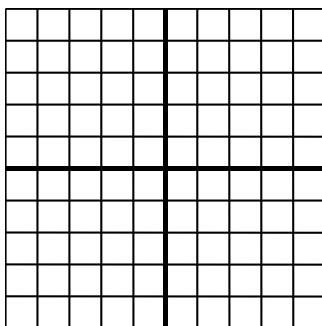
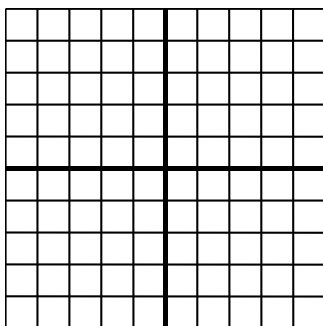
Vertex: _____

Vertex: _____

Point: _____

Point: _____

Point: _____



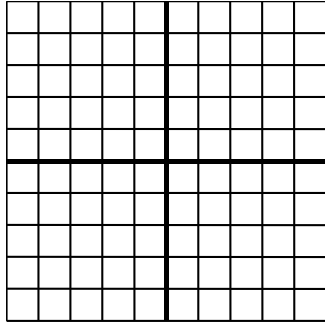
Vertex Form: Practice Problems: pg 253 #26-31

26.) $y = (x - 1)^2 + 2$

x = _____

Vertex: _____

Point: _____

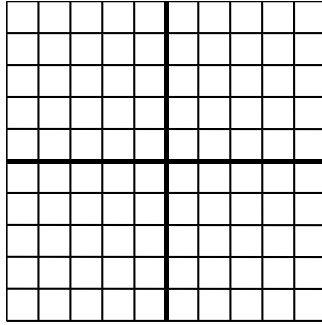


27.) $y = -(x - 2)^2 - 1$

x = _____

Vertex: _____

Point: _____

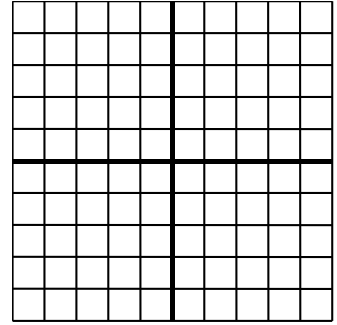


28.) $y = -2(x + 3)^2 - 4$

x = _____

Vertex: _____

Point: _____

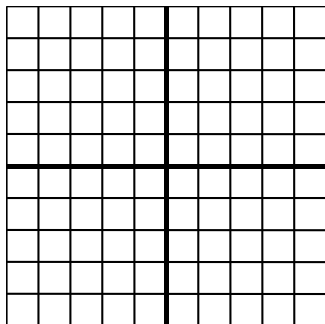


29.) $y = 3(x + 4)^2 + 5$

x = _____

Vertex: _____

Point: _____

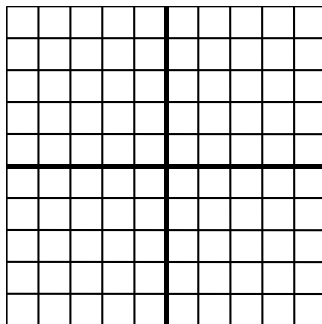


30.) $y = -1/3(x + 1)^2 - 1$

x = _____

Vertex: _____

Point: _____

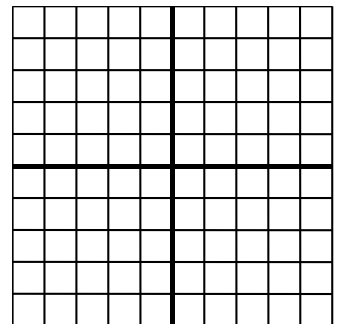


31.) $y = 5/4(x - 3)^2$

x = _____

Vertex: _____

Point: _____



Intercept Form $y = a(x - p)(x - q)$ $\rightarrow p$ and q are the x -intercepts

Opening up _____

Opening down (flipped) _____

Determine if the graph opens up or down.

1.) $y = (x - 2)(x + 3)$

2.) $y = -2(x - 1)(x - 4)$

3.) $y = 2x(x - 3)$

Axis of Symmetry and x-coordinate of the vertex

x is half way between p and q

$$x = \frac{p + q}{2}$$

Find the axis of symmetry of the parabola.

4.) $y = -2(x - 1)(x - 5)$

5.) $y = 3(x + 2)(x - 4)$

6.) $y = -x(x + 5)$

x = _____

x = _____

x = _____

Find the vertex of the parabola. Find x by counting half way between p and q. Find y by plugging x into the given equation.

7.) $y = (x + 5)(x - 3)$

8.) $y = -4(x + 1)(x - 1)$

9.) $y = 3(x - 6)(x - 4)$

Graph the following quadratic equations. Find the axis of symmetry and the vertex.

10.) $y = -2(x + 2)(x - 4)$

11.) $y = -x(x + 2)$

12.) $y = (x + 3)(x - 3)$

x = _____

x = _____

x = _____

Vertex: _____

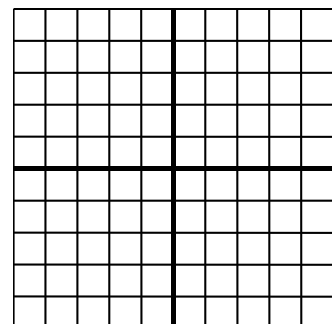
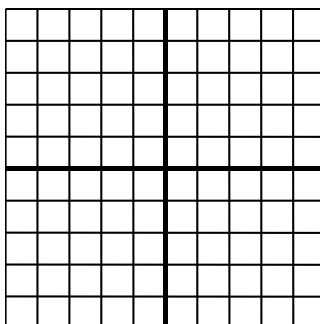
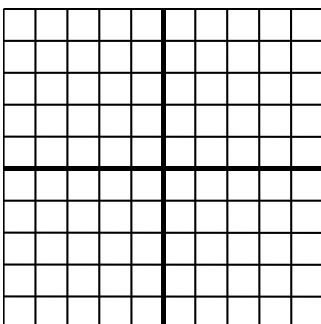
Vertex: _____

Vertex: _____

Point: _____

Point: _____

Point: _____



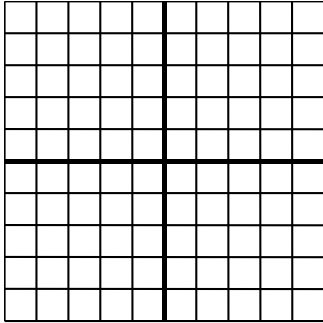
Intercept Form: Practice Problems: pg 254 #32 - 37

32.) $y = (x - 2)(x - 6)$

$x =$ _____

Vertex: _____

Point: _____

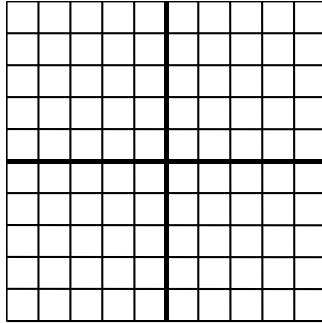


33.) $y = 4(x + 1)(x - 1)$

$x =$ _____

Vertex: _____

Point: _____

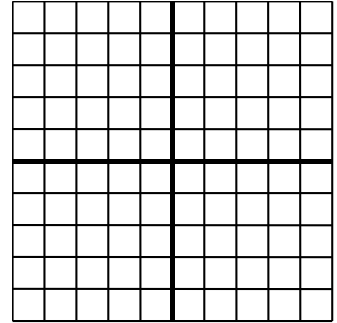


34.) $y = -(x + 3)(x + 5)$

$x =$ _____

Vertex: _____

Point: _____

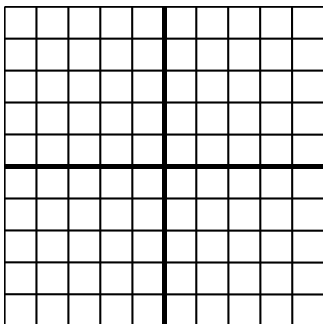


35.) $y = 1/3(x + 4)(x + 1)$

$x =$ _____

Vertex: _____

Point: _____

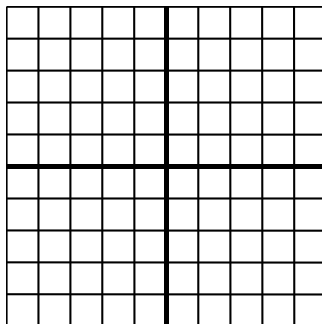


36.) $y = -1/2(x - 3)(x + 2)$

$x =$ _____

Vertex: _____

Point: _____



37.) $y = -3x(x - 2)$

$x =$ _____

Vertex: _____

Point: _____

