

Homework 1.14 Changing Forms: Standard \leftrightarrow Vertex

Convert from Standard Form to Vertex Form. Give the vertex and axis of symmetry.

1. $y = x^2 + 16x + 71$

2. $y = -x^2 - 14x - 59$

3. $y = 2x^2 + 36x + 170$

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

5. $y = x^2 - 12x + 46$

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

7. $y + 6 = (x + 3)^2$

8. $x^2 - 12x + y + 40 = 0$

Convert from Standard Form to Vertex Form. Give the vertex and axis of symmetry.

1. $y = x^2 + 16x + 71$

$$y = (x + 8)^2 + 7$$

Axis of Symmetry: $x = -8$
Vertex: $(-8, 7)$

2. $y = -x^2 - 14x - 59$

$$y = -(x + 7)^2 - 10$$

Axis of Symmetry: $x = -7$
Vertex: $(-7, -10)$

3. $y = 2x^2 + 36x + 170$

$$y = 2(x + 9)^2 + 8$$

Axis of Symmetry: $x = -9$
Vertex: $(-9, 8)$

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

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

Axis of Symmetry: $x = -2$
Vertex: $(-2, 4)$

5. $y = x^2 - 12x + 46$

$$y = (x - 6)^2 + 10$$

Axis of Symmetry: $x = 6$
Vertex: $(6, 10)$

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

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

Axis of Symmetry: $x = 3$
Vertex: $(3, -4)$

7. $y + 6 = (x + 3)^2$

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

Axis of Symmetry: $x = -3$
Vertex: $(-3, 6)$

8. $x^2 - 12x + y + 40 = 0$

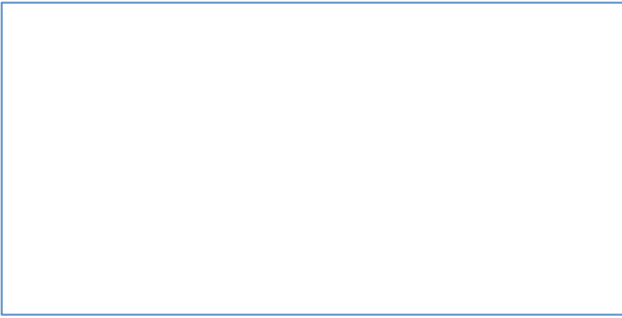
$$y = -(x - 6)^2 - 4$$

Axis of Symmetry: $x = 6$
Vertex: $(6, -4)$

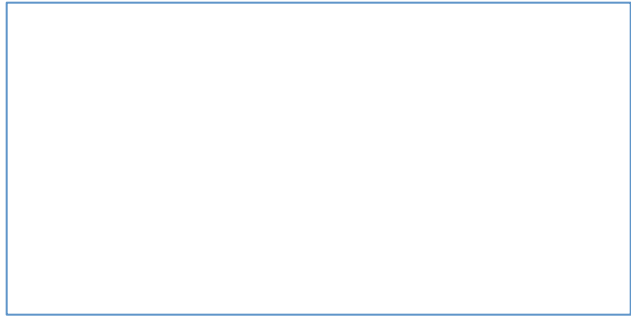
Homework 1.14 Changing Forms: Standard↔Vertex (Page 2)

Convert from Vertex Form to Standard Form.

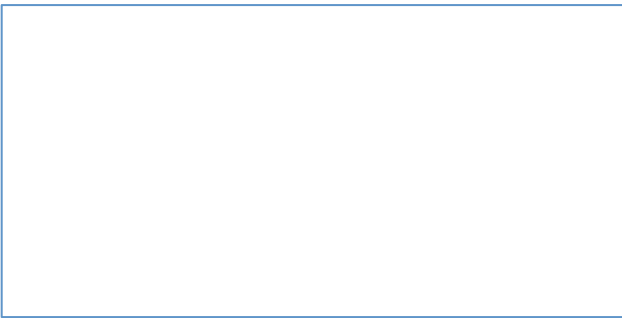
1. $y = (x - 1)^2 + 8$



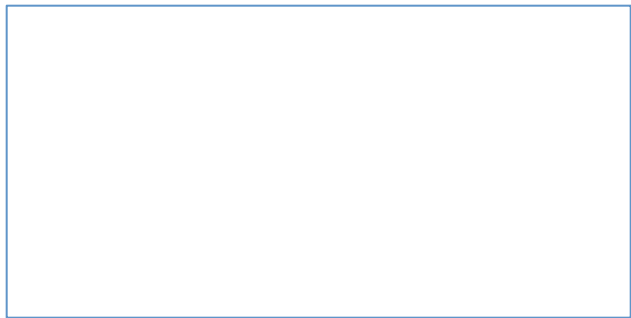
2. $y = 2(x + 3)^2 - 5$



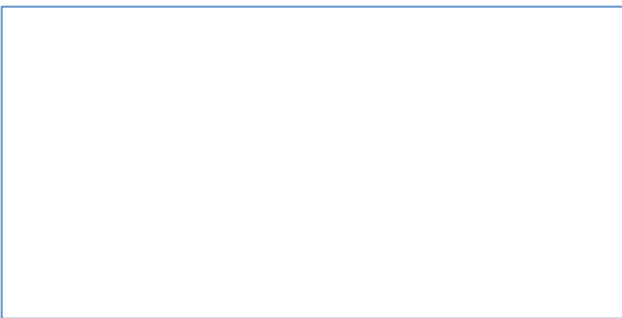
3. $y = -(x - 4)^2 + 3$



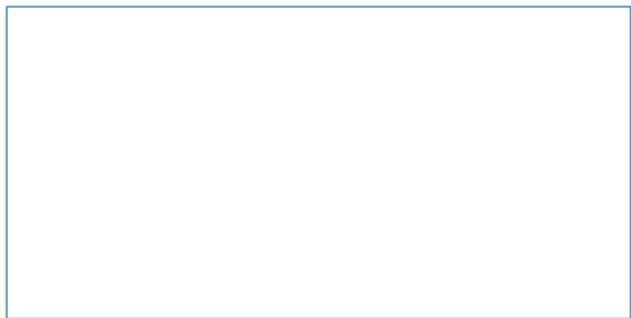
4. $y = 2(x + 1)^2 - 2$



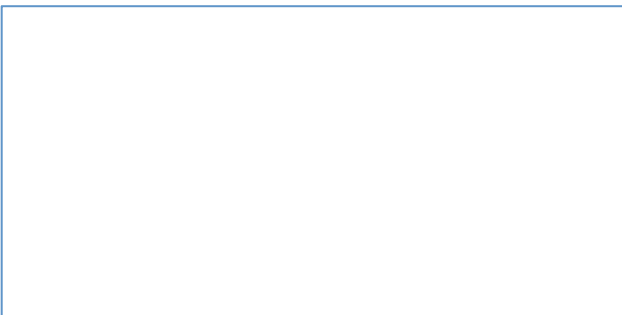
5. $y = (x + 3)^2 - 1$



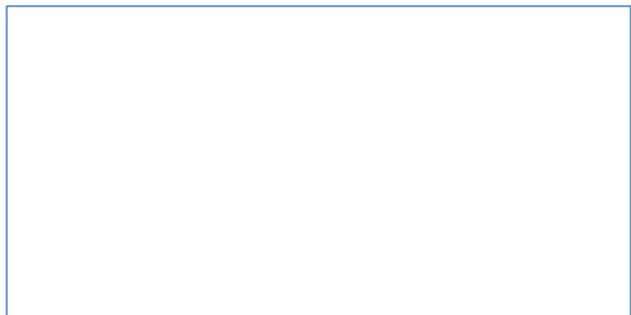
6. $y = (x - 2)^2 - 1$



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



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



Convert from Vertex Form to Standard Form.

1. $y = (x - 1)^2 + 8$

$$y = x^2 - 2x + 9$$

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

$$y = 2x^2 + 12x + 13$$

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

$$y = -x^2 + 8x - 13$$

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

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

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

$$y = x^2 + 6x + 8$$

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

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

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

$$y = 3x^2 + 24x + 50$$

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

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