Name_____

Graphing and Properties of Parabolas

Date_____ Period_____

Identify the vertex, axis of symmetry, and direction of opening of each.

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

2) $y = -\frac{1}{3}(x - 7)^2 + 1$
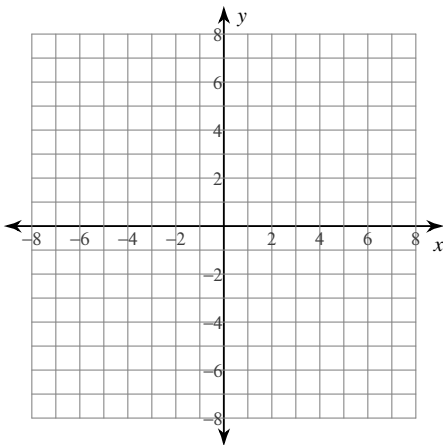
3) $y = -\frac{1}{3}x^2 + \frac{16}{3}x - \frac{46}{3}$

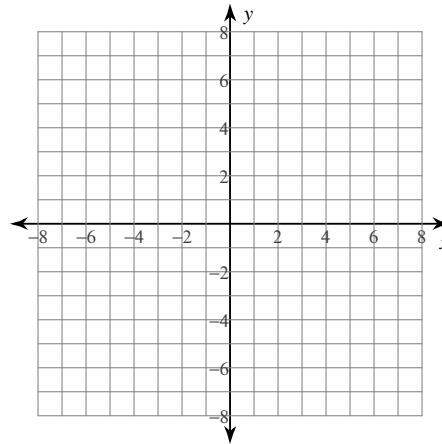4) $y = 2x^2 + 36x + 166$

5) $y = x^2 + 4x - 5$

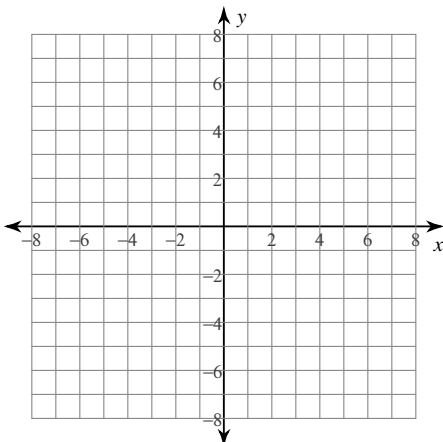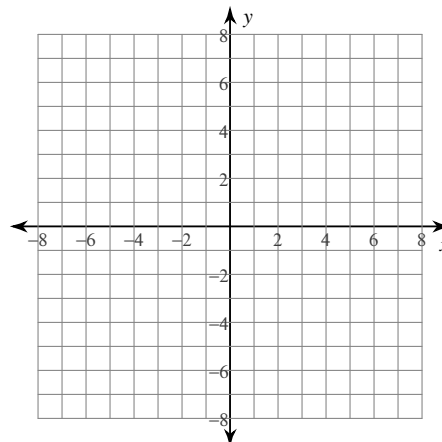6) $y = 2x^2 + 8x + 16$

Graph each equation.
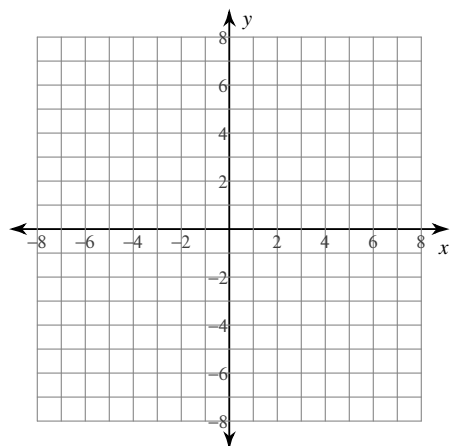
7) $y = 2x^2$

8) $x = \frac{1}{4}y^2$

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

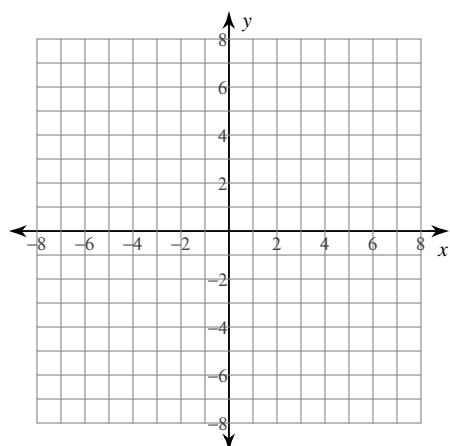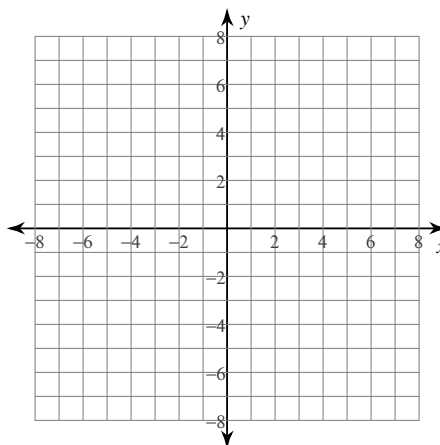10) $x = -(y + 3)^2 + 4$

11) $y = \dfrac{1}{4}x^2 + \dfrac{1}{2}x + \dfrac{9}{4}$

12) $x = -y^2 + 4y - 5$
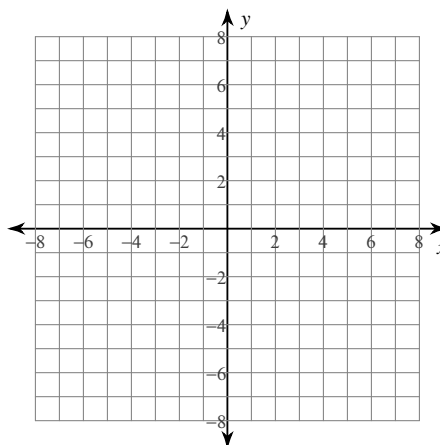

13) $y = -\dfrac{1}{2}x^2 + 3x + \dfrac{1}{2}$

14) $x = y^2 - 6y + 8$

Identify the min/max value, length of the latus rectum, intercepts on the axis parallel to the axis of symmetry, and intercepts on the axis perpendicular to the axis of symmetry of each.

15) $26x - 80 + y = 2x^2$

16) $15y^2 + x - 210y + 675 = 0$

17) $-x^2 + 3y + 25 = 0$

18) $-8y = -x + y^2 + 19$

Name_____

Graphing and Properties of Parabolas

Date_____ Period_____

Identify the vertex, axis of symmetry, and direction of opening of each.

1) $y = 2(x + 10)^2 + 1$ Vertex: $(-10, 1)$
Axis of Sym.: $x = -10$
Opens: Up

2) $y = -\dfrac{1}{3}(x - 7)^2 + 1$ Vertex: $(7, 1)$
Axis of Sym.: $x = 7$
Opens: Down

3) $y = -\dfrac{1}{3}x^2 + \dfrac{16}{3}x - \dfrac{46}{3}$ Vertex: $(8, 6)$
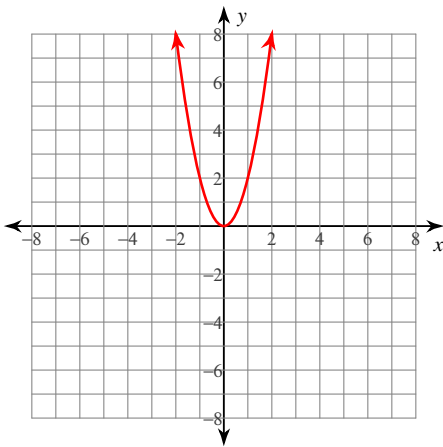Axis of Sym.: $x = 8$
Opens: Down

4) $y = 2x^2 + 36x + 166$ Vertex: $(-9, 4)$
Axis of Sym.: $x = -9$
Opens: Up

5) $y = x^2 + 4x - 5$ Vertex: $(-2, -9)$
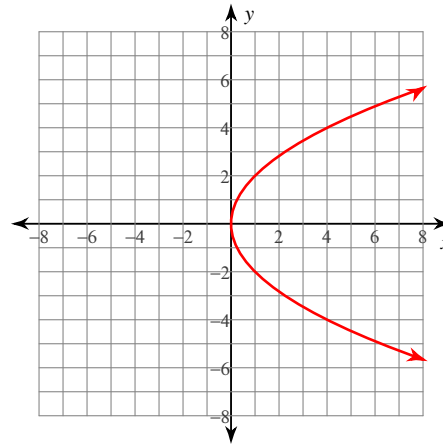Axis of Sym.: $x = -2$
Opens: Up

6) $y = 2x^2 + 8x + 16$ Vertex: $(-2, 8)$
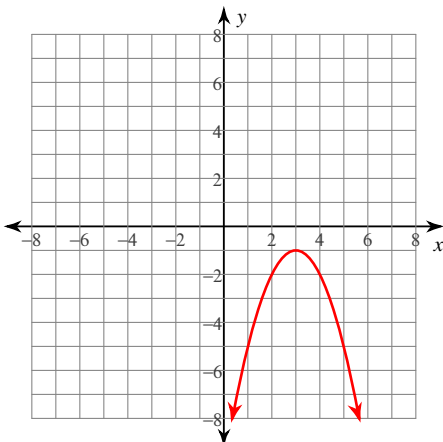Axis of Sym.: $x = -2$
Opens: Up

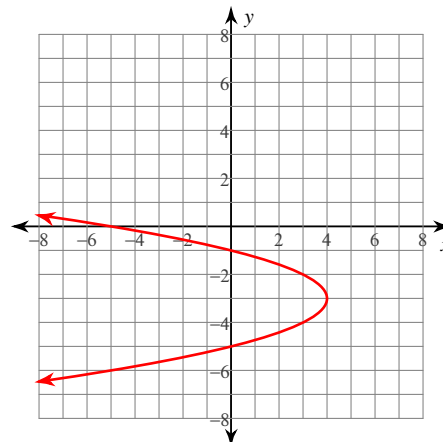**Graph each equation.**

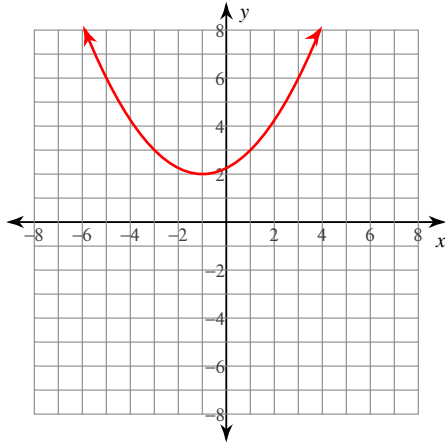7) $y = 2x^2$

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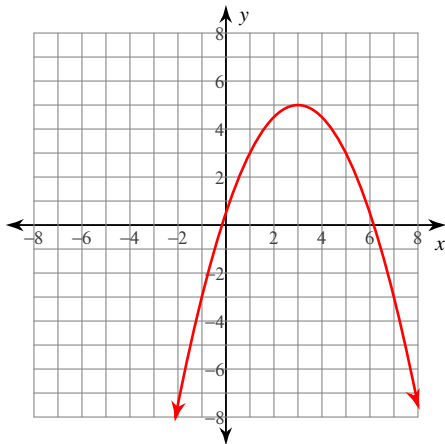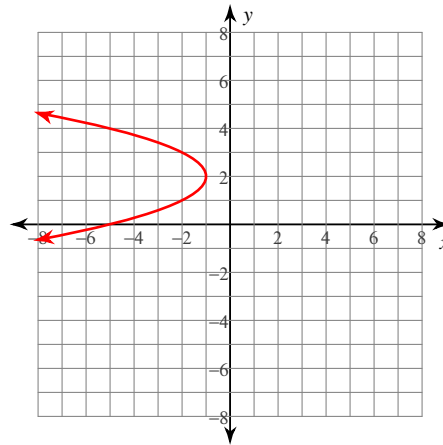

10) $x = -(y + 3)^2 + 4$

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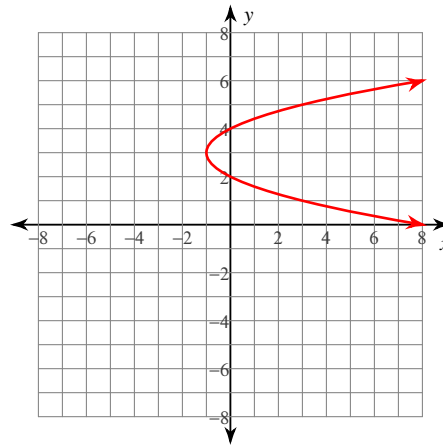

13) $y = -\dfrac{1}{2}x^2 + 3x + \dfrac{1}{2}$

14) $x = y^2 - 6y + 8$

Identify the min/max value, length of the latus rectum, intercepts on the axis parallel to the axis of symmetry, and intercepts on the axis perpendicular to the axis of symmetry of each.

15) $26x - 80 + y = 2x^2$ Min value $= -\dfrac{9}{2}$

Latus rectum: $\dfrac{1}{2}$ units

y-int: 80
x-int: 5 and 8

16) $15y^2 + x - 210y + 675 = 0$

Max value $= 60$

Latus rectum: $\dfrac{1}{15}$ units

x-int: -675
y-int: 5 and 9

17) $-x^2 + 3y + 25 = 0$ Min value $= -\dfrac{25}{3}$

Latus rectum: 3 units

y-int: $-\dfrac{25}{3}$

x-int: -5 and 5

18) $-8y = -x + y^2 + 19$

Min value $= 3$
Latus rectum: 1 unit
x-int: 19
y-int: None