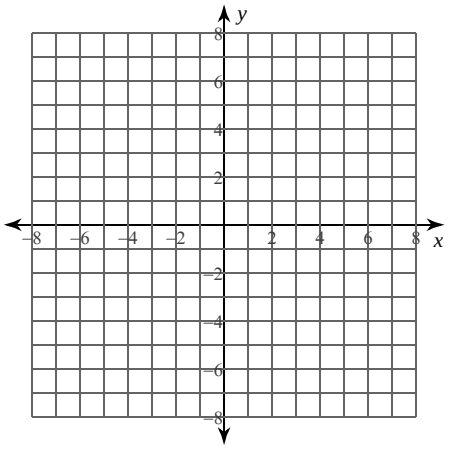
Parabolas

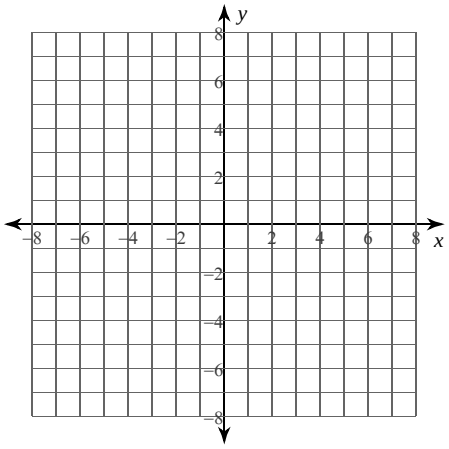
Date_____ Period____

Identify the vertex, focus, axis of symmetry, and directrix of each. Then sketch the graph.

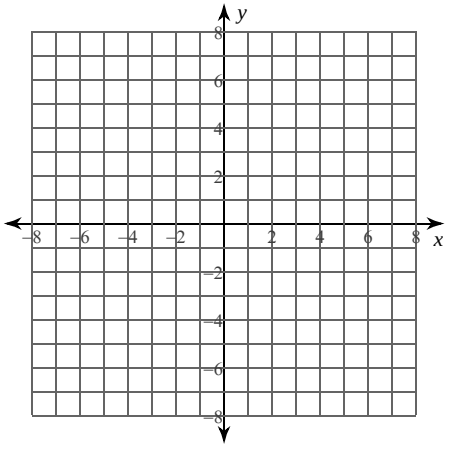
1) $y = -(x+3)^2 - 1$



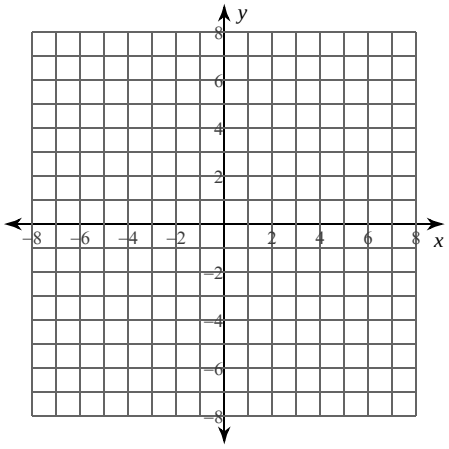
2) $x = -\frac{1}{4}(y+2)^2$



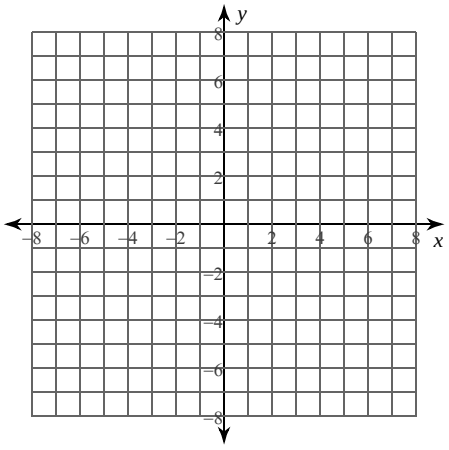
3) $-\frac{1}{3}(x-3) = (y+5)^2$



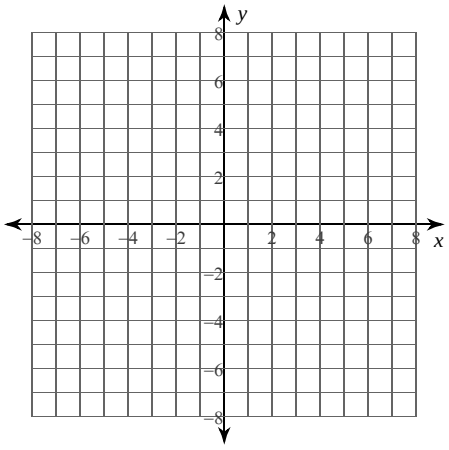
4) $-(y+2) = (x-2)^2$



5) $3y + 4x = -2x^2 - 14$



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



Identify the vertex, focus, axis of symmetry, directrix, direction of opening, min/max value, length of the latus rectum, and the x- and y-intercepts of each.

7) $-2x^2 - 4x + y + 70 = 0$

8) $2y^2 + x + 20y + 51 = 0$

Use the information provided to write the transformational form equation of each parabola.

9) Vertex: $(-1, -3)$, Focus: $\left(-\frac{17}{16}, -3\right)$

10) Vertex: $(-3, 0)$, Focus: $\left(-\frac{47}{16}, 0\right)$

11) Vertex: $(-8, 5)$, Directrix: $y = \frac{19}{4}$

12) Opens left or right
Vertex: $(-7, 9)$
Passes through: $(-4, 8)$

13) Vertex: $(-2, -3)$, x-intercept: -11

14) Opens up or down, and passes through $(-4, -3)$, $(-9, 27)$, and $(-3, 3)$

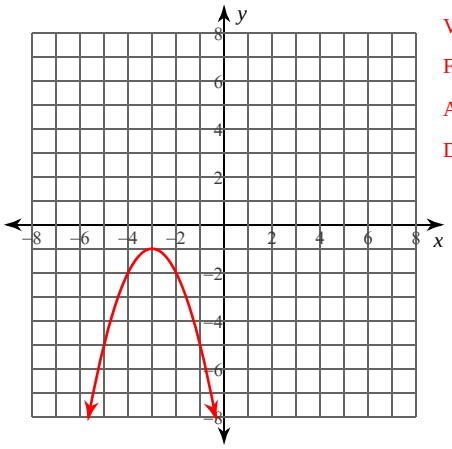
Kuta Software - Infinite Precalculus Name_____

Parabolas

Date_____ Period____

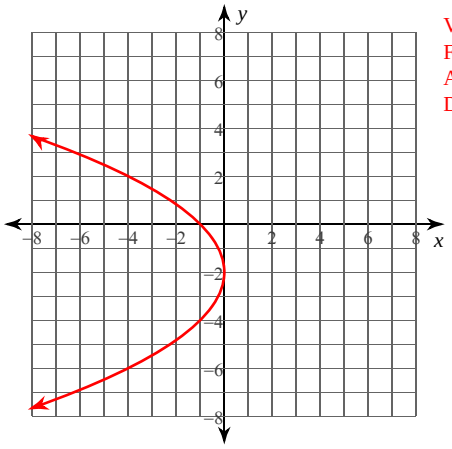
Identify the vertex, focus, axis of symmetry, and directrix of each. Then sketch the graph.

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



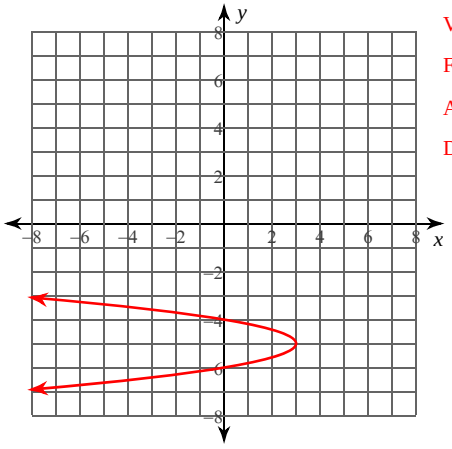
Vertex: $(-3, -1)$
Focus: $\left(-3, -\frac{5}{4}\right)$
Axis of Sym.: $x = -3$
Directrix: $y = -\frac{3}{4}$

2) $x = -\frac{1}{4}(y+2)^2$



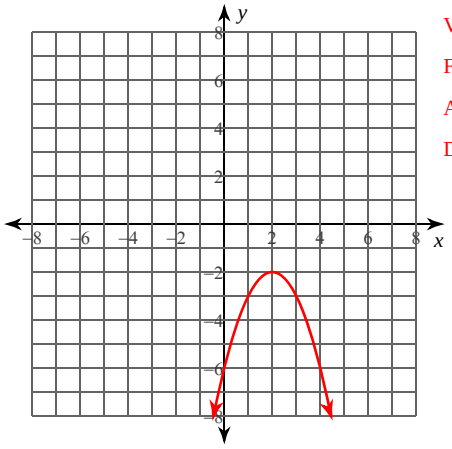
Vertex: $(0, -2)$
Focus: $(-1, -2)$
Axis of Sym.: $y = -2$
Directrix: $x = 1$

3) $-\frac{1}{3}(x-3) = (y+5)^2$



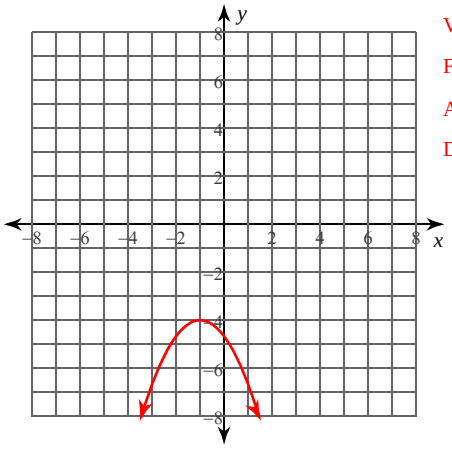
Vertex: $(3, -5)$
Focus: $\left(\frac{35}{12}, -5\right)$
Axis of Sym.: $y = -5$
Directrix: $x = \frac{37}{12}$

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



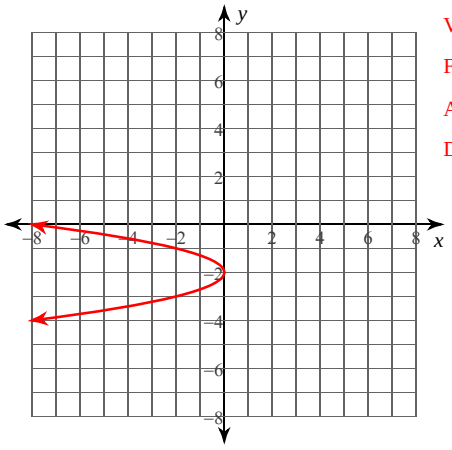
Vertex: $(2, -2)$
Focus: $\left(2, -\frac{9}{4}\right)$
Axis of Sym.: $x = 2$
Directrix: $y = -\frac{7}{4}$

5) $3y + 4x = -2x^2 - 14$



Vertex: $(-1, -4)$
Focus: $\left(-1, -\frac{35}{8}\right)$
Axis of Sym.: $x = -1$
Directrix: $y = -\frac{29}{8}$

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



Vertex: $(0, -2)$
Focus: $\left(-\frac{1}{8}, -2\right)$
Axis of Sym.: $y = -2$
Directrix: $x = \frac{1}{8}$

Identify the vertex, focus, axis of symmetry, directrix, direction of opening, min/max value, length of the latus rectum, and the x- and y-intercepts of each.

7) $-2x^2 - 4x + y + 70 = 0$

Vertex: $(-1, -72)$
Focus: $\left(-1, -\frac{575}{8}\right)$
Axis of Sym.: $x = -1$
Directrix: $y = -\frac{577}{8}$
Opens: Up
Min value = -72
Latus rectum: $\frac{1}{2}$ units
y-int: -70
x-int: 5 and -7

8) $2y^2 + x + 20y + 51 = 0$

Vertex: $(-1, -5)$
Focus: $\left(-\frac{9}{8}, -5\right)$
Axis of Sym.: $y = -5$
Directrix: $x = -\frac{7}{8}$
Opens: Left
Max value = -1
Latus rectum: $\frac{1}{2}$ units
x-int: -51
y-int: None

Use the information provided to write the transformational form equation of each parabola.

9) Vertex: $(-1, -3)$, Focus: $\left(-\frac{17}{16}, -3\right)$

$-\frac{1}{4}(x + 1) = (y + 3)^2$

10) Vertex: $(-3, 0)$, Focus: $\left(-\frac{47}{16}, 0\right)$

$\frac{1}{4}(x + 3) = y^2$

11) Vertex: $(-8, 5)$, Directrix: $y = \frac{19}{4}$

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

12) Opens left or right
Vertex: $(-7, 9)$
Passes through: $(-4, 8)$

$\frac{1}{3}(x + 7) = (y - 9)^2$

13) Vertex: $(-2, -3)$, x-intercept: -11

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

14) Opens up or down, and passes through $(-4, -3)$, $(-9, 27)$, and $(-3, 3)$

$\frac{1}{2}(y + 5) = (x + 5)^2$