11.2 Practice – Parabolas

Name: Solutions

In exercises 1-4, Sketch the graph of the given equation and fill in the blanks for the given information.

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

$4p = -12$

$p = -3$

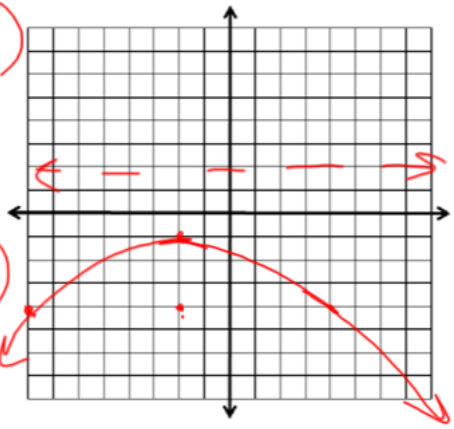
Coordinate of vertex: $(-2,-1)$

Direction it opens: down

Axis of symmetry: $x = -2$

Coordinate of focus: $(-2,-4)$

Equation for directrix: $y = 2$



2. $(y+2)^2 = 16(x+3)$

$4p = 16$

$p = 4$

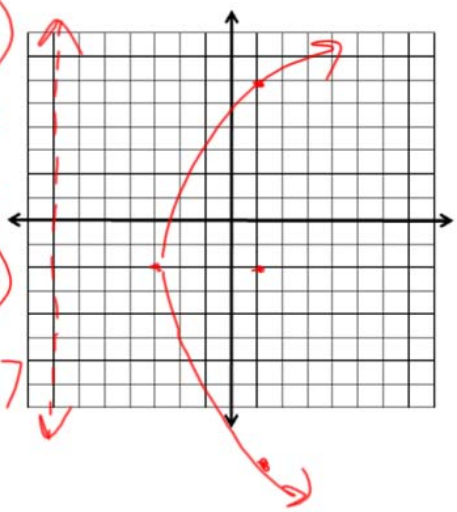
Coordinate of vertex: $(-3,-2)$

Direction it opens: right

Axis of symmetry: $y = -2$

Coordinate of focus: $(1,-2)$

Equation for directrix: $x = -7$



3. $(y-1)^2 = 8(x+3)$

$4p = 8$

$p = 2$

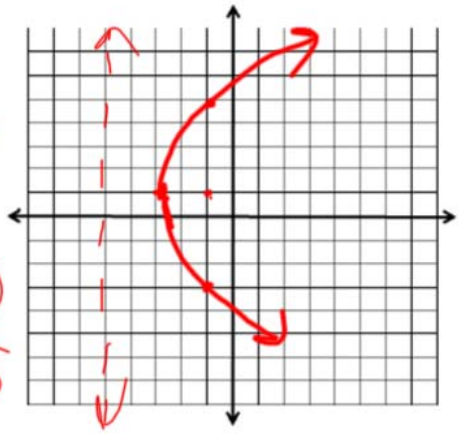
Coordinate of vertex: $(-3,1)$

Direction it opens: right

Axis of symmetry: $y = 1$

Coordinate of focus: $(-1,1)$

Equation for directrix: $x = -5$



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

$4p = -2$

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

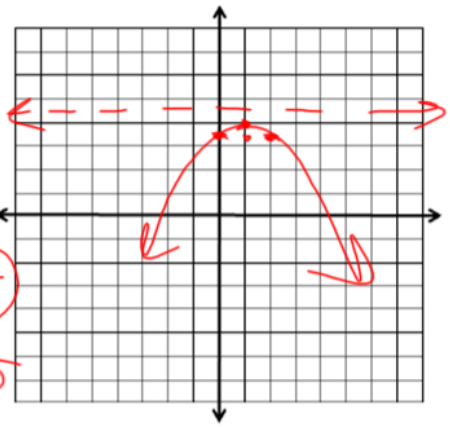
Coordinate of vertex: $(1,4)$

Direction it opens: down

Axis of symmetry: $x = 1$

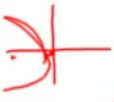
Coordinate of focus: $(1, 3.5)$

Equation for directrix: $y = 4.5$



In exercises 5-12, find an equation for the parabola that satisfies the given condition. Use the same form we used in our notes. (The quantity squared will be isolated.)

5. Vertex $(0,0)$, focus $(-3,0)$



$p = -3$

$4p = -12$

$y^2 = -12x$

6. Vertex $(-4,-4)$, focus $(-2,-4)$

$p = 2$

$4p = 8$

$(y+4)^2 = 8(x+4)$

7. Vertex $(-5,6)$, focus $(-5,3)$

$p = -3$

$4p = -12$

$(x+5)^2 = -12(y-6)$

8. Vertex $(4,3)$, directrix $x = 6$

$p = -2$

$4p = -8$

$(y-3)^2 = -8(x-4)$

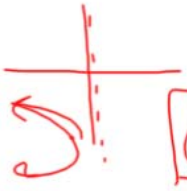
9. Vertex $(1,-5)$, directrix $y = -9$

$p = 4$

$4p = 16$

$(x-1)^2 = 16(y+5)$

10. Vertex $(-2,-8)$, directrix $x = 0$



$p = -2$

$4p = -8$

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

11. Focus $(0,1)$, directrix $x = 10$

Vertex: $(5,1)$

$p = -5$

$4p = -20$

$(y-1)^2 = -20(x-5)$

12. Focus $(3,4)$, directrix $y = 1$

Vertex: $(3, 2.5)$

$p = 1.5$

$4p = 6$

$(x-3)^2 = 6(y-2.5)$