Quadratics – Focus and Directrix Practice

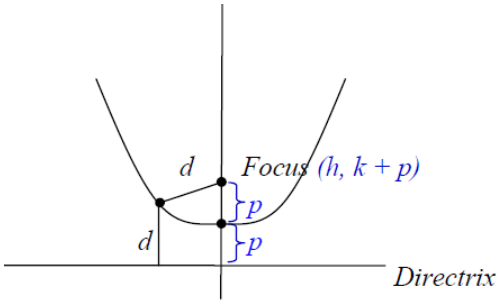
Vertex: (h, k)

Focus: (h, k + p)

Diretrix: y = k - p

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

$a = {}^1/_{4p}$



Write an equation of a parabola with the given vertex and focus.

1. vertex (0, 0); focus (0, 4)

2. vertex (4, 7); focus (4, 4)

3. vertex (5, 2); focus (5, 9)

4. Find the focus of a quadratic with a vertex of (3,-5) and a directrix of y = -9.

Identify the vertex, the focus, and the directrix of the parabola with the given equation. Then sketch the graph of the parabola.

5. $y = \frac{1}{12}x^2$

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

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

8. Find the value for *p* for the parabola $x = \frac{1}{10}(y+6)^2 + 2$?

9. The center of a pipe with a diameter of 0.5 in. is located 10 in. from a mirror with a parabolic cross section used as a solar collector. The center of the pipe is at the focus of the parabola.

a. Write an equation to model the cross section of the mirror.

b. The pipe receives 25 times more sunlight than it would without the mirror. The amount of light collected by the mirror is directly proportional to its diameter. Find the width of the mirror.