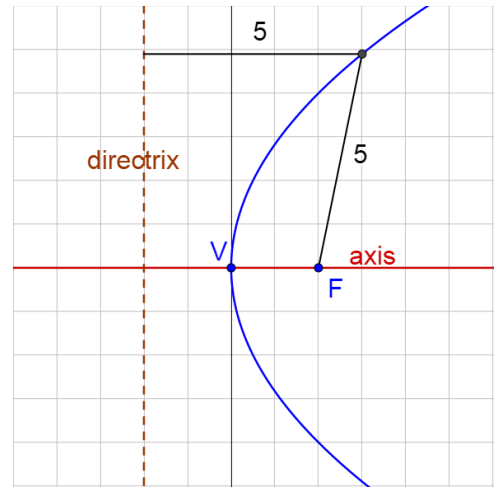


Precalculus

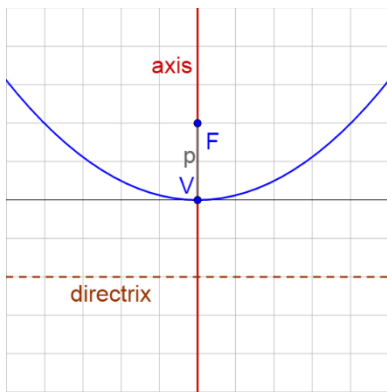
7-02 Parabolas

Parabolas

- Set of all points in a plane that are _____ from a fixed line, called the _____ and a fixed point, called the _____.
- Vertex
 - max or min point
 - midpoint between the _____ and _____.
- Axis of symmetry
 - line perpendicular to the _____
 - goes through the _____ and _____.
- Parabola bends _____ the focus and _____ from the directrix.

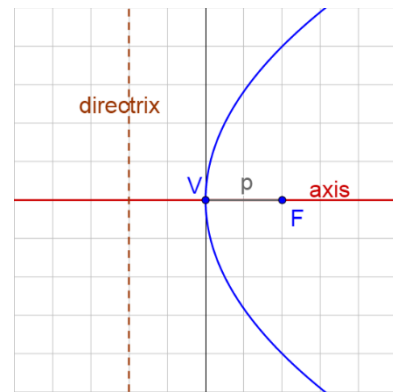


Vertical Parabola



- $p =$ directed (+, -) distance from vertex to focus
 - Vertex (h, k)
 - Focus $(h, p + k)$
 - Directrix $y = k - p$
- $$(x - h)^2 = 4p(y - k)$$

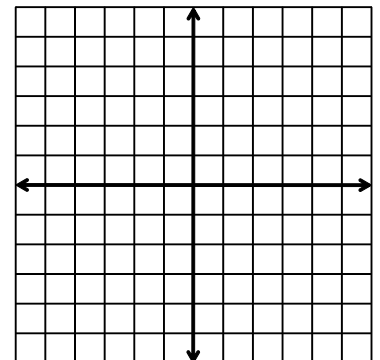
Horizontal Parabola



- $p =$ directed (+, -) distance from vertex to focus
 - Vertex (h, k)
 - Focus $(p + h, k)$
 - Directrix $x = h - p$
- $$(y - k)^2 = 4p(x - h)$$

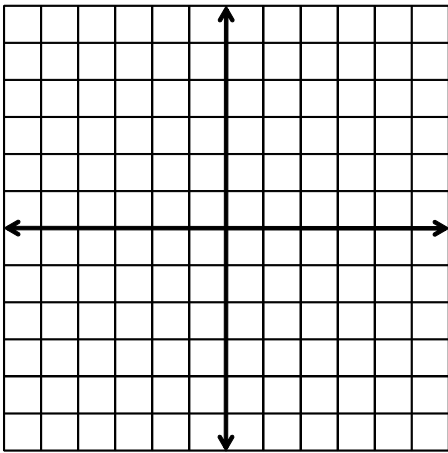
Find the vertex, focus, and directrix of the parabola given by $y = \frac{1}{2}x^2$.

Find the standard form of the equations of a parabola with vertex at $(0, 0)$ and focus $(-2, 0)$.



Find the vertex, focus, and directrix of the parabola given by $x^2 - 2x - 16y - 31 = 0$.

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



Write the standard form of the equation of the parabola with focus $(1, 2)$ and directrix $x = 3$.

