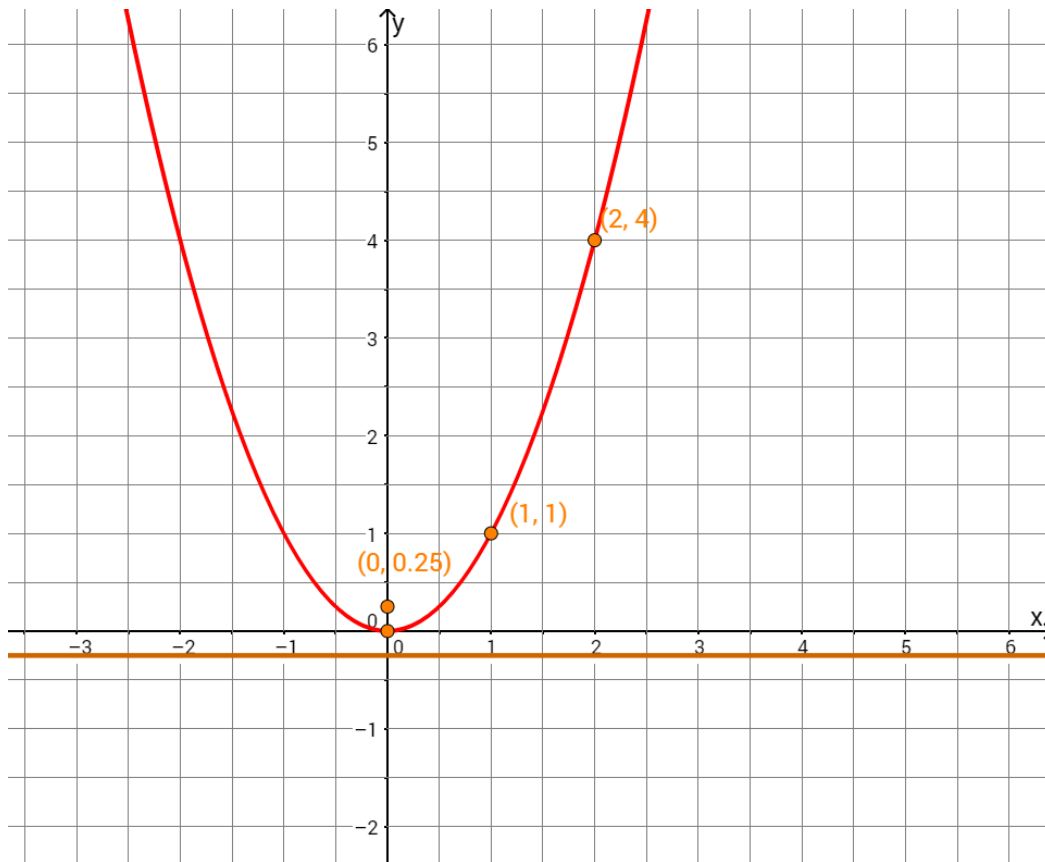


$$\text{General equation for a parabola with a vertex at the origin: } y = \frac{x^2}{4p}$$

What effect does the value of p have on the graph of the equation of $y = \frac{x^2}{4p}$? Below is a graph of the parabola with a vertex on the origin and a p value of $\frac{1}{4}$. Your goal is to graph the parabola with a p value of $\frac{1}{2}$.

1. Add and label the focus and directrix of the parabola with a p value of $\frac{1}{2}$.
2. Show that the point $(1, 1/2)$ is a point on the parabola with a p value of $\frac{1}{2}$ with both the algebraic method, using the equation, and the geometric method, using the definition of a parabola.
3. Use the equation and geometric methods to determine and label several points on the graph of this parabola. Sketch in the parabola with a p value of $\frac{1}{2}$. What do you notice?



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