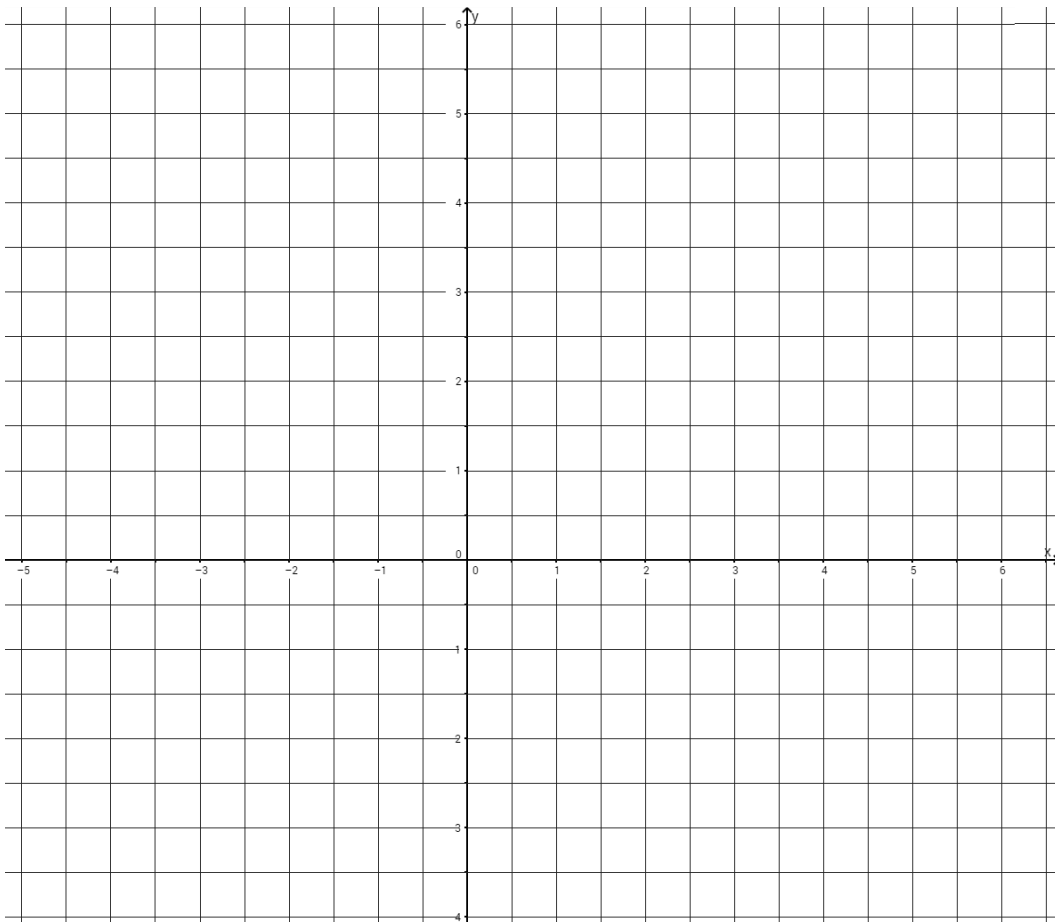


$$\text{General equation for a parabola with a vertex at the origin: } y = \frac{x^2}{4p}$$

What effect does the value of p have on the graph of the equation of $y = \frac{x^2}{4p}$? To make sense of this question, begin by constructing the graph for the parabola with a p value of $\frac{1}{4}$.

1. Find the specific equation for the parabola with a p value of $\frac{1}{4}$.
2. Plot and label the focus and the directrix for this parabola with a p value of $\frac{1}{4}$. How do you know where they are?
3. Use the equation and geometric methods to determine several points on the graph of this parabola. Sketch in the parabola with a p value of $\frac{1}{4}$. How do you think the graph will change if p increases to $\frac{1}{2}$?



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