Lesson 5 Teaching Portal Materials

Episode Supports

Episode 7: Reflecting

Episode Description

Sasha and Keoni discuss what the equation $y = \frac{x^2}{4p}$ means. They also use it to find the equation of a parabola with a vertex on the origin and p = 0.5.

Students' Conceptual Challenges

Students may have difficulty understanding the role that the parameter, *p,* plays in the equation $y = \frac{x^2}{4p}$. It may be confusing that the equation represents a family of parabolas.

➡ By using the equation $y = \frac{x^2}{4p}$ to graph a particular parabola (when p = 0.5), Keoni and Sasha gain insight into how the equation $y = \frac{x^2}{4p}$ can generate different parabolas, all with a vertex at the origin, by changing the p-value.

Focus Questions

For use in a classroom, pause the video and ask these questions:

1. [Pause the video at **0:59**]. List everything you know about the parabola with a vertex at the origin and a focus $\frac{1}{2}$ unit above the origin.

2. [Pause the video at **6:35**]. List everything you know about the equation $y = \frac{x^2}{4p}$.

Supporting Dialogue

Invite students to engage in a pair-share activity as they respond to each focus question:

1. With your partner, make a list of what you know about the parabola with a vertex at the origin and a focus $\frac{1}{2}$ unit above the origin. Prepare your answers to share with the whole class.

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2. With your partner, make a list of what you know about the equation $y = \dfrac{x^2}{4p}$. Prepare your answers to share with the whole class.

Math Extensions

1. Consider the two parabolas graphed below. Use the equations for each graph and geometric reasoning to label the coordinates of 4 points on each graph.

2. Compare the points and coordinates across the two parabolas. List any patterns that you notice.