Lesson 7 Teaching Portal Materials

Episode Supports

Episode 2: Exploring

Episode Description

Keoni and Sasha use points that share an *x*-value to explain why increasing the *p*-value in the equation $y = \frac{x^2}{4p}$ results in the parabola getting wider.

Students' Conceptual Challenges

When asked to justify why the parabolas get wider as the *p*-value increases, Sasha restates her claim. She and Keoni struggle to identify evidence that can support their claim **[2:11-2:19]**.

- The teacher asks them to attend to the *y*-values of the labeled points. Keoni states that the *y*-values decrease as the *p*-value increases. When prompted, Sasha indicates how the decreasing *y*-values impact the relative widths of the parabolas. Keoni and Sasha continue to build on the precision of their language in this episode and the next.

Focus Questions

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

1. [Pause the video at **0:53**]. How can we confirm that the three labeled points are on each parabola?

2. [Pause the video at **3:02**]. What do you think that Keoni means when he says "that it is getting wider by staying…"?

Supporting Dialogue

Invite students to engage in stating and justifying mathematical claims with another student:

- Work with a partner to use the evidence in this episode in order to make a claim about the how changing the *p*-value changes the width of the parabola.

- Work with a partner to build justification for your claim from the evidence in the episode.

Math Extensions

1. Find the coordinates of points on each of the three parabolas when the *x*-value is 1.

2. Considering the ordered pairs that you found, what do you notice about the *y*-values when the *p*-value increases? How does that impact the shape of the parabola?