

Lesson 6 Teaching Portal Materials

Episode Supports

Episode 4: Repeating Your Reasoning

Episode Description

Keoni and Sasha continue to increase the p -value and investigate what happens to the graph of the parabola. In this episode, they graph a parabola with a p -value of 1.

Students' Conceptual Challenges

Neither the x -axis nor the y -axis of the coordinate grid used in this problem has a grid spacing of 1. However, Sasha and Keoni begin counting “squares” on the grid as if each measures 1 unit by 1 unit [1:35- 1:49].

- ➔ The teacher points out a contradiction, namely if each “square” on the grid has a length of 1 unit, then their “special point” is 4 units from the focus rather than 2 units as they initially claimed. When prompted to establish what they are using for a unit, Keoni notices that every two “boxes” or “squares” on the coordinate grid represents one unit [1:56-2:18].

Focus Questions

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

1. [Pause the video at 1:03]. Sasha and Keoni graphed the special point (2,1). Why is that point on the parabola with a p -value of 1?
2. [Pause the video at 1:42]. Sasha said that the special point is 4 units away from the focus and directrix. Do you agree or disagree?

Supporting Dialogue

After the video for the episode has concluded, invite students to engage in a pair-share activity:

You have just watched Sasha and Keoni graph the parabola represented by the equation $y = \frac{x^2}{4}$.

Talk to your neighbor about how you would approach the problem if you had to graph the equation again. Then graph the parabola. You can use ideas from Sasha and Keoni in addition to

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creating your own. Prepare to share your methods for graphing the parabola with the whole class.

Math Extensions

1. Graph the parabolas represented by the equations $y = -x^2$ and $y = -\frac{x^2}{2}$.
2. Compare the two graphs. What is the same and what is different?

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