

Practice

Form K

A New Look at Parabolas

Write an equation of a parabola with vertex at the origin and the given focus.

1. focus at $(0, 2)$

2. focus at $(-5, 0)$

3. focus at $(0, -1)$

4. focus at $(3, 0)$

Identify the vertex, the focus, and the directrix of the parabola with the given equation. Then sketch the graph of the parabola.

5. $y = \frac{1}{6}x^2$ This is a vertical parabola with vertex at $(0, 0)$.

The focus is at $(0, 1.5)$.The directrix is .

6. $x = -2y^2$

7. $y = \frac{3}{2}x^2$

Write an equation of a parabola with vertex at the origin and the given directrix.

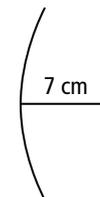
8. directrix $x = -4$

9. directrix $y = 10$

10. directrix $y = -3$

11. directrix $x = 1$

12. A cross section of a satellite dish is a parabola. The receiver is located at the focus. Suppose the receiver is located 7 cm from the vertex of the dish. Model a cross section of the satellite dish by writing an equation of a parabola that opens to the right and has its vertex at the origin.



Practice (continued)

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A New Look at Parabolas

Identify the vertex, the focus, and the directrix of the parabola with the given equation. Then sketch the graph of the parabola.

13. $y = x^2 - 6x + 3$

Start by writing the equation in vertex form by completing the square.

14. $x = y^2 - 2y - 1$

15. $y = \frac{1}{2}x^2 + 2x - 3$

Write an equation of a parabola with the given vertex and focus.

16. vertex (0, 4); focus (0, 0)

17. vertex (3, 6); focus (6, 6)

Write an equation of a parabola with vertex at (2, 3) and the given information.

18. focus (2, 3.5)

19. directrix $x = 0$

20. **Writing** Explain how to find the vertex of the parabola $x = y^2 + 4y - 9$.