Name _____ Date _____

3.6 Practice A

In Exercises 1–6, use the Distance Formula to write an equation of the parabola.

1. focus: $(0, 2)$

    directrix: $y = -2$

2. focus: $(0, -3)$

    directrix: $y = 3$

3. focus: $(0, -6)$

    directrix: $y = 6$

4. vertex: $(0, 0)$

    directrix: $y = 4$

5. vertex: $(0, 0)$

    focus: $(0, -1)$

6. vertex: $(0, 0)$

    directrix: $y = 2$

7. Which of the given characteristics describe parabolas that open up? Explain your reasoning.

    A. focus: $(0, 3)$

        directrix: $y = -3$

    B. focus: $(0, -5)$

        directrix: $y = 5$

    C. focus: $(0, -10)$

        directrix: $y = 10$

In Exercises 8–10, identify the focus, directrix, and axis of symmetry of the parabola. Graph the equation.

8. $y = \frac{1}{12}x^2$

9. $y = -\frac{1}{16}x^2$

10. $x = \frac{1}{8}y^2$

11. The cross section (with units in inches) of a parabolic satellite dish can be modeled by the equation $y = \frac{1}{48}x^2$. How far is the receiver from the vertex of the cross section? Explain.

In Exercises 12–17, write an equation of the parabola with the given characteristics.

12. focus: $(2, 0)$

    directrix: $x = -2$

13. focus: $(-4, 0)$

    directrix: $x = 4$

14. focus: $\left(0, \frac{3}{4}\right)$

    directrix: $y = -\frac{3}{4}$

15. directrix: $x = -6$

    vertex: $(0, 0)$

16. focus: $(0, 2)$

    vertex: $(0, 0)$

17. directrix: $x = 1$

    vertex: $(0, 0)$

In Exercises 18–21, identify the vertex, focus, directrix, and axis of symmetry of the parabola. Describe the transformations of the graph of the standard equation with $p = 1$ and vertex $(0, 0)$.

18. $y = \frac{1}{12}(x - 1)^2 + 3$

19. $y = -\frac{1}{8}(x + 5)^2 - 2$

20. $x = \frac{1}{4}(y + 4)^2 + 2$

21. $y = -\frac{1}{28}(x + 6)^2 + 10$