NAME _____ DATE _____

Practice 71

FOR USE WITH SECTION 11.2

For Exercises 1–8:

a. Find an equation of the parabola with the given characteristics.

b. Graph your equation from part (a).

1. vertex (0, 0); directrix $y = -1$

2. vertex (0, 0); directrix $x = \frac{1}{2}$

3. vertex (2, 0); directrix $y = 2$

4. vertex (0, 4); focus (0, 5)

5. focus $\left(\frac{5}{4}, 3\right)$; directrix $x = \frac{3}{4}$

6. focus $\left(4, -\frac{1}{2}\right)$; vertex (4, –1)

7. focus $\left(-3, -\frac{7}{8}\right)$; directrix $y = -\frac{9}{8}$

8. focus (–5, 1); vertex (–2, 1)

Name the vertex, focus, and directrix of a parabola with the given equation. Also, axis of symm. eqn. **Then sketch the parabola. You may want to use a graphing calculator or graphing software to check your work.**

9. $y = \frac{1}{4}x^2$

10. $x = -2y^2 + 1$

11. $y = -\frac{1}{8}(x - 4)^2$

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

13. $y^2 = 3 - x$

14. $x = 2(y + 1)^2 - 4$

15. $y = -x^2 + 5$

16. $x = \frac{1}{12}(y - 1)^2 - 4$

17. $y = -4(x + 2)^2 + 3$

18. Sealed-beam automobile headlights have a rear silvered reflector whose cross-section has the shape of a parabola. In order to insure that emerging reflected rays of light will be parallel, the filament (the tiny wire that produces light) is located at the focus of this parabola. For each diameter and depth measurement, find the distance of the filament from the vertex of the reflector.

a. diameter = 4.8 in.; depth = 2.4 in.

b. diameter = 6.4 in.; depth = 4 in.

19. Writing Suppose a parabola has focus (p, q) and directrix $y = -q$. Choose several values of p and q and graph the parabolas that correspond to these values of p and q. Describe, as specifically as you can, how changing these values affects the corresponding parabolas. In particular, describe the relationship between $|q|$ and the shape of the parabola.