

Parabolas HW

Lesson 1

Determine whether each parabola opens upward, downward, to the left, or to the right.

1. $-4y = x^2$

2. $16x = y^2$

3. $y^2 = -2x$

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

Graph the parabola. Then identify the focus and directrix.

5. $-32y = x^2$

6. $12x = y^2$

7. $-8y - x^2 = 0$

8. $y^2 = -4x$

Write an equation of a parabola with vertex at the origin and the following focus or directrix.

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

10. focus at $(0, 4)$

11. directrix at $x = 3$

12. directrix at $y = -7$

Write the equation whose graph is the set of all points in the plane equidistant from the given point and the given line.

13. F(0, 8) and $y = -8$

14. F(-5, 0) and $x = 5$

Sketch the graph. Then identify the vertex, focus, and directrix of each equation.

15. $-4(y + 1) = (x - 3)^2$

16. $8(x - 4) = (y - 5)^2$

Rewrite the parabola in standard form by completing the square. Then identify the vertex and sketch the graph.

17. $x^2 - 6x - 8y + 25 = 0$

18. $y^2 + 8y - 4x + 16 = 0$

Solve the system of equations by a) graphing and b) algebraically.

19.
$$\begin{cases} y = x^2 + 10x + 11 \\ y = 6x + 8 \end{cases}$$

20.
$$\begin{cases} y = x^2 + 8x + 4 \\ y = 7x + 4 \end{cases}$$

