

4. Find the vertex, focus, directrix, and focal width of the parabola.

$$(x+4)^2 = -6(y+1)$$

Find the equation in standard form for the parabola that satisfies the given conditions.

12. Vertex  $(0,0)$ , focus  $(0,2)$

16. Focus  $(-4,0)$ , directrix  $x = 4$

20. Vertex  $(0,0)$ , opens upward, focal width = 3

24. Focus  $(2,-3)$ , directrix  $x = 5$

28. Vertex  $(-3,3)$ , opens downward, focal width = 20

Sketch the graph of the parabola by hand.

36.  $(x-5)^2 = 20(y+2)$