"The Parabola"



- Use the standard and general forms of the equation of the parabola
- Graph parabolas

 Parabola-the graph of a quadratic equation, such as y=x²

THE PARABOLA

 The locus of all points in a given plane that are the same distance from a given point called the focus, and a given line called the directrix.

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- In the Figure F is the FOCUS
- Line l is the DIRECTRIX
- Y=k is the line of symmetry
- V is the vertex (h,k)
- p is the distance from the focus to the vertex

Standard Form

• Vertex at (h,k) directrix parallel to the y axis

$$(y-k)^2 = 4p(x-h)$$

Vertex at (h,k) directrix parallel to the x axis

$$(x-h)^2 = 4p(y-k)$$



Example 1

Find the coordinates of the focus and the vertex and the equations of the directrix and the line of symmetry for a parabola with equation $y^2 + 2x = 0$. Then Graph.

STEP 1: write the eqn in standard form

$$(y-k)^2 = 4p(x-h)$$



General Form

directrix parallel to the y axis

$$y^2 + Dx + Ey + F = 0$$

directrix parallel to the x axis

 $x^2 + Dx + Ey + F = 0$



Example 2

• Write the standard form of

x² -8x-y+18=0, then graph the parabola.

