

Graphing Parabola Example

Math 130 *Kovitz* Spring 2012

Graph the equation $y = -4x^2 + 7x - 11$, and label the line of symmetry with its equation and the vertex and all intercepts with their coordinates.

The vertex is at $\left(\frac{7}{8}, -\frac{127}{16}\right) = (0.875, -7.9375)$. Use formula $\left(-\frac{b}{2a}, c - \frac{b^2}{4a}\right)$.

It is $\left(\frac{-7}{-8}, -11 + \frac{49}{-16}\right) = (0.875, -11 + 3.0625) = (0.875, -7.9375)$

The line of symmetry is $x = 7/8$ or $x = 0.875$.

The y -intercept is when $x = 0$, so $(0, -11)$.

To find the x -intercept, set $y = 0$. But in this case the parabola opens down and has a vertex in the fourth quadrant. There are no x -intercepts.

A useful point for graphing is the reflection of the y -intercept across the line of symmetry. That point is $(1.75, -11)$.

This parabola open down and has a narrow shape.

(Graph omitted.)