HansenMath™ Algebra 2: Notes on the Parabola
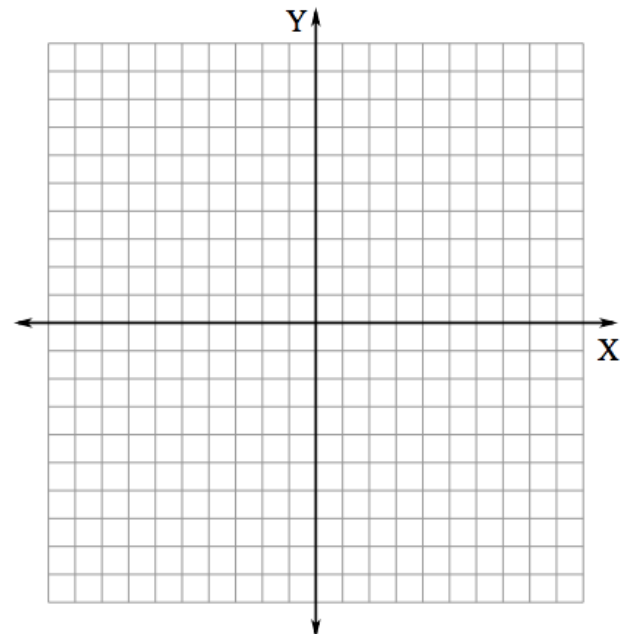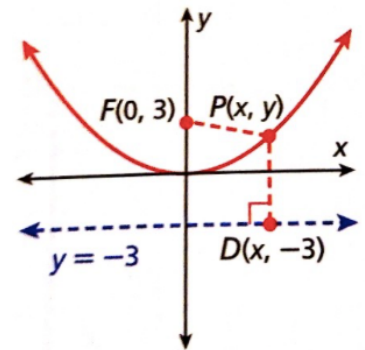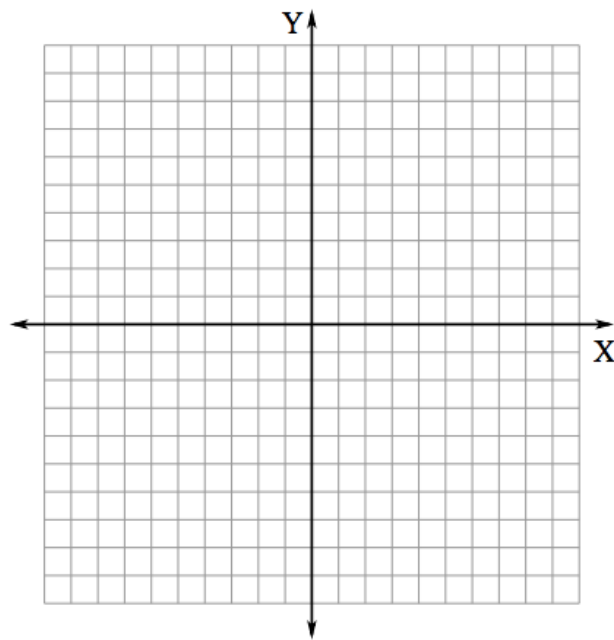
A _____ is the set of all points in a plane that are the _____ _____

from a given point called the _____ and a given line called the _____.

Due to this unique property, we can use the _____ _____ to find
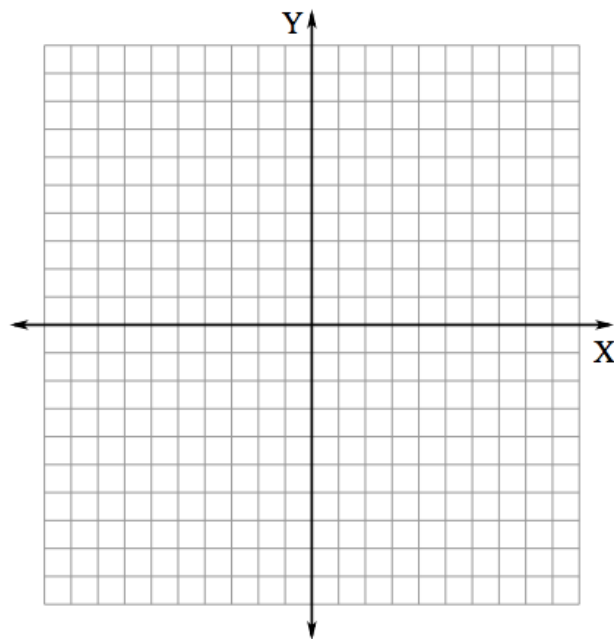the equation of a parabola.

Example 1: Graph the parabola given by the equation, $y = \frac{1}{4}(x + 2)^2 - 3$

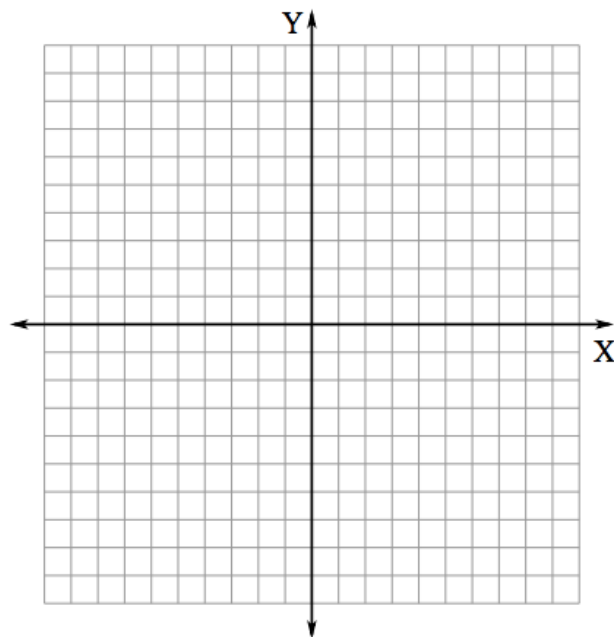$F(0, 3)$ $P(x, y)$

$y = -3$ $D(x, -3)$

Example 2: Graph the parabola given by the equation, $y = -\frac{1}{8}(x + 3)^2 + 5$
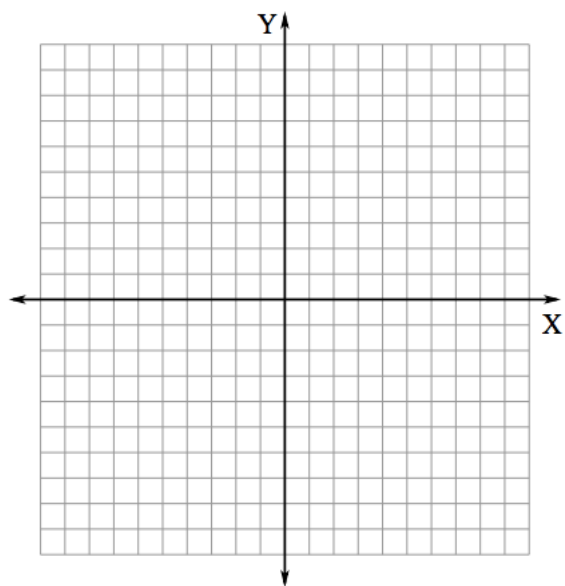

Example 3: Graph the parabola given by the equation, $x = \frac{1}{2}(y - 4)^2 - 2$
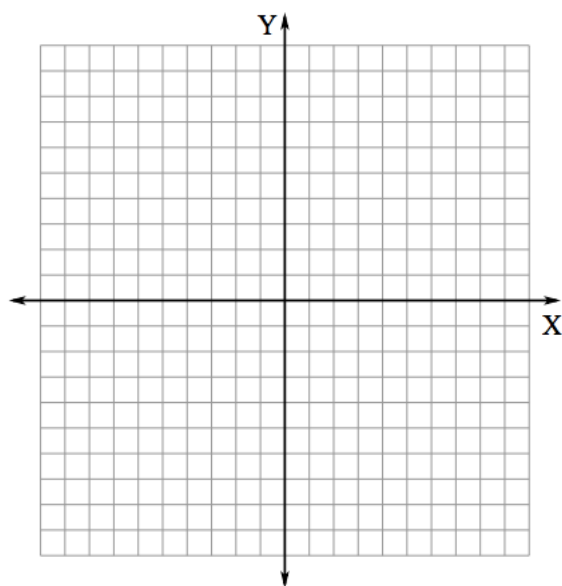
Example 4: Graph the parabola given by the equation, $x = -\dfrac{1}{12}y^2$

Example 5: Write the equation of a parabola with focus F(0, 4) and directrix y = -4
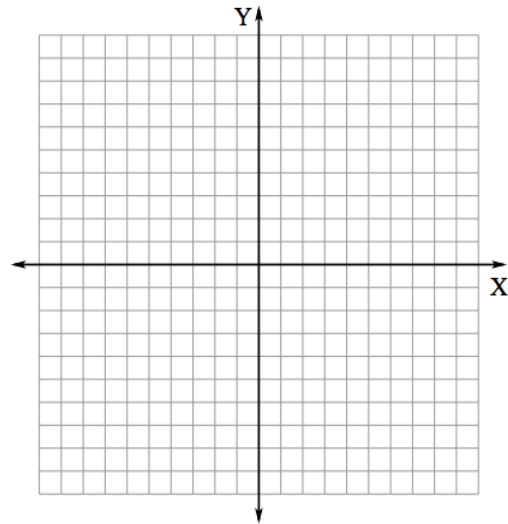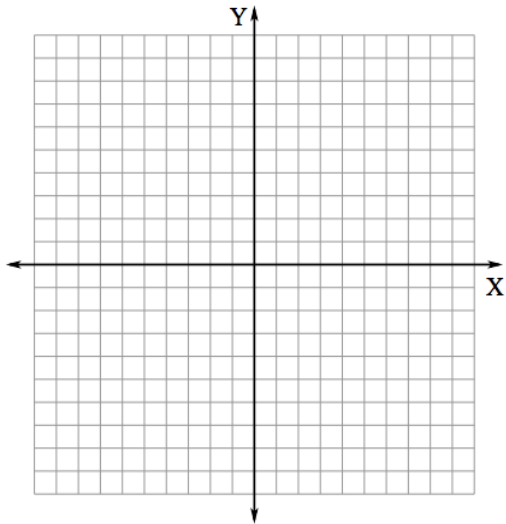
Example 6: Write the equation of a parabola with focus F(5, 5) and directrix y = 7

Graph the parabola, including the vertex, focus, directrix, and axis of symmetry

1.) $y = -\frac{1}{4}(x + 6)^2 + 4$

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

Write an equation of a parabola with vertex at the origin and:

3.) Focus F (0 , 4)

4.) Focus (-6, 0)

Write an equation of a parabola with vertex at the origin and:

5.) directrix y = 5

6.) directrix x = -4

Write an equation of a parabola with:

7.) focus F(0, 2) and directrix y = -2

8.) focus F(0, -10) and directrix y = 10