Math 1060 ~ Trigonometry

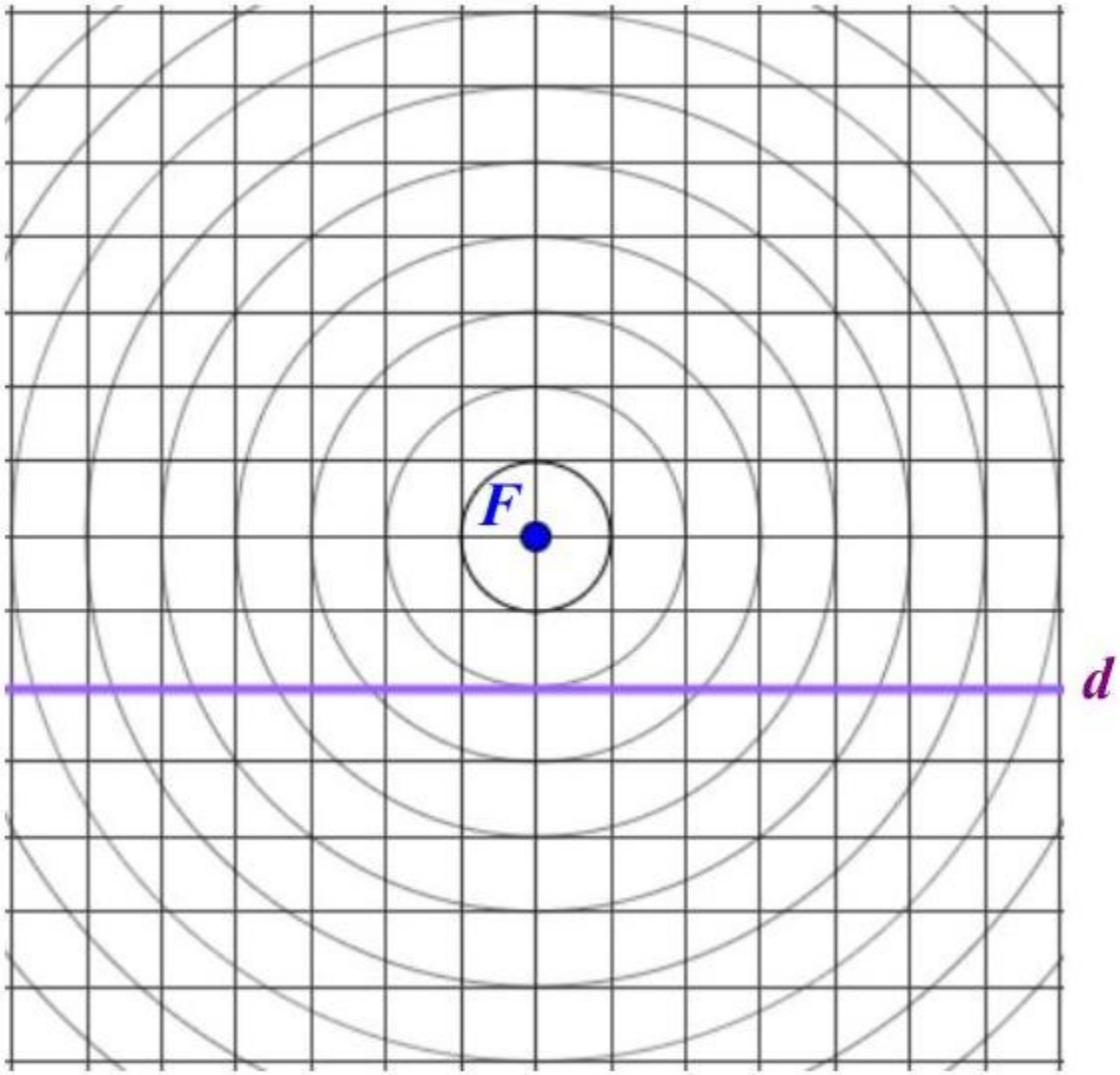
26 Conic Sections: Parabolas

Parabolas

A parabola is the set of points of equal distance from a given point and a given line. The point is called the focus and the line is called the directrix.

EX 1

Plot several points which are equidistant from F, the focus and d, the directrix.



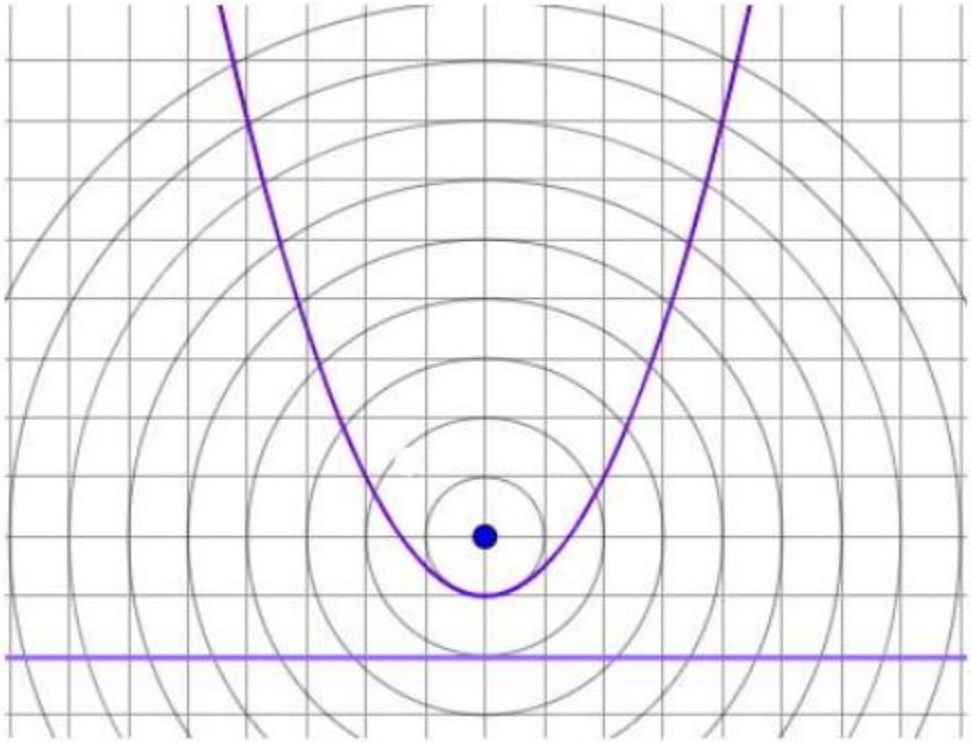
Vocabulary for Parabolas

Focus

Directrix

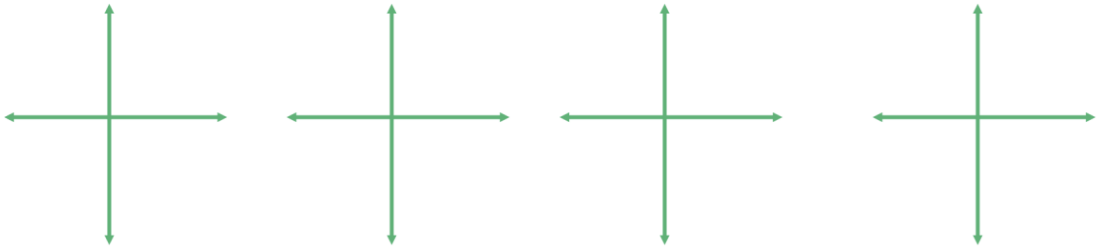
Axis of symmetry

Latus rectum (focal chord)



We can develop a formula for the parabola.
Let (x, y) be any point on the parabola.
Let F be at $(0, c)$ and the line L be at $y = -c$.

Standard Form of Parabolas with Vertex at $(0, 0)$



EX 2

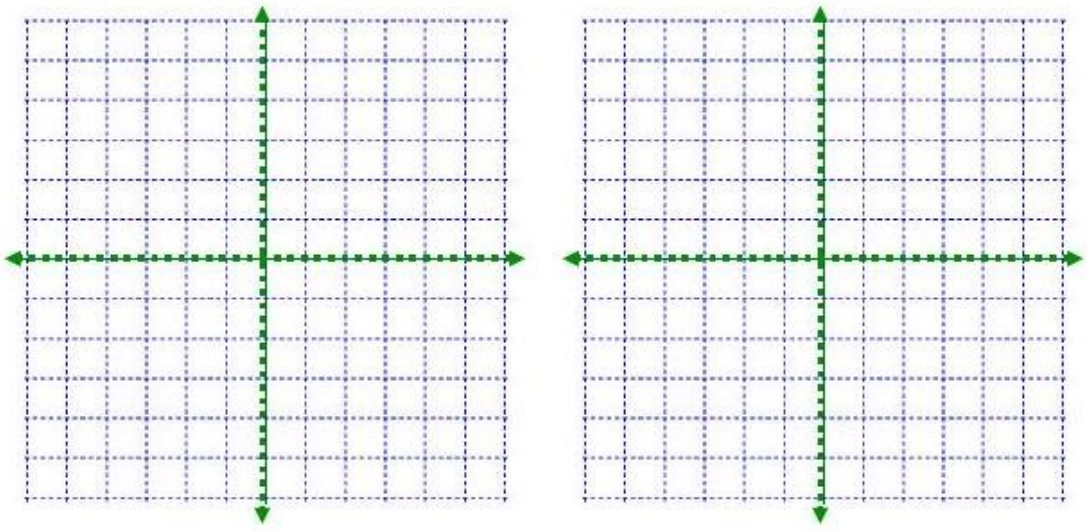
Graph each of these.

2a)

$2x^2 = -4y$

2b)

$3y^2 - 12x = 0$



Transformations of a Parabola

EX 3

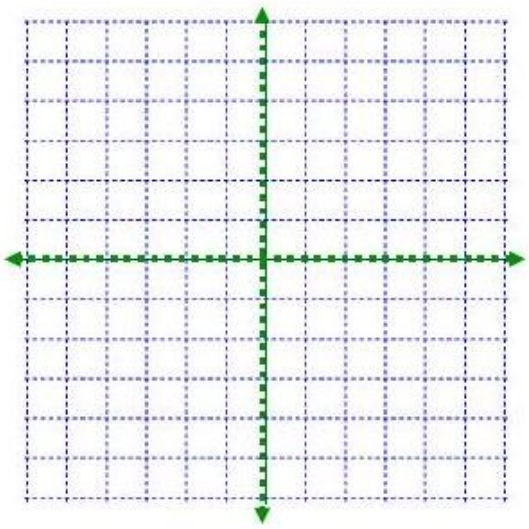
Graph each of these. You may need to complete the square on one of them to put it in standard form.

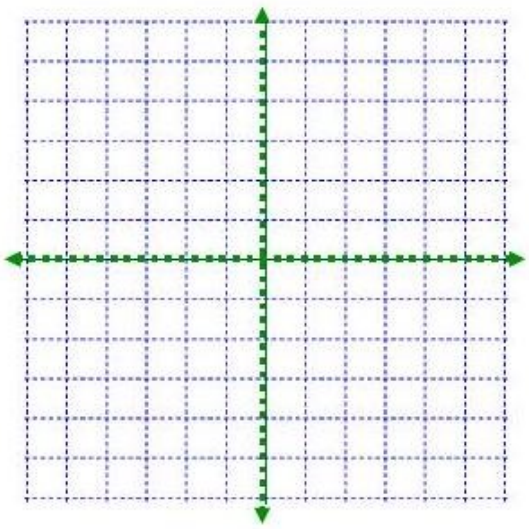
3a)

$(x-2)^2 = 2(y-1)$

3b)

$y^2 - 6y = -4x - 11$



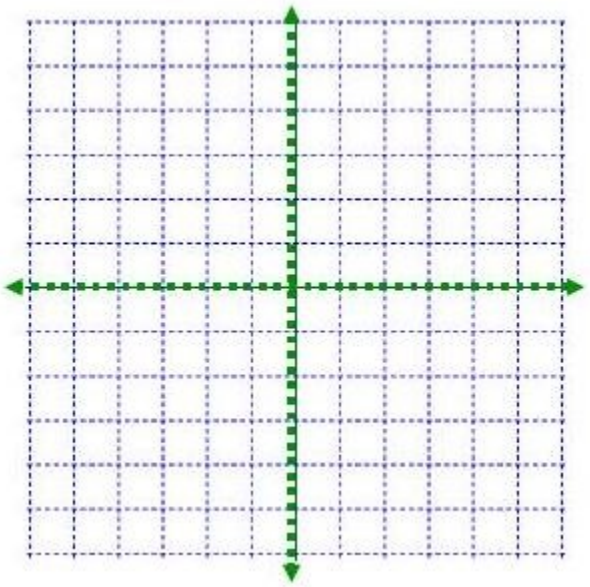


EX 4

Find the equation of a parabola with the given information.

4a)

directrix at $y = -4$, vertex at $(4, -1)$



4b)

vertex at (4,2), passing through (-3,-4) with axis parallel to the x-axis.