Math 1060 ~ Trigonometry

$$\sin^2 u + \cos^2 u = 1$$

$$\sin 2u = 2\sin u \cos u$$

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$c^2 = a^2 + b^2 - 2ab\cos C$$

25 Parametric Descriptions for Oriented Curves

Learning Objectives

In this section you will:

- Eliminate the parameter in a pair of parametric equations.
- Parameterize curves given in Cartesian coordinates.

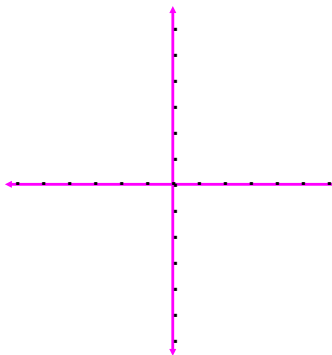
Eliminating the Parameter in Parametric Equations

To eliminate the parameter, we solve one equation for t and use substitution to arrive at a single equation in terms of x and y.

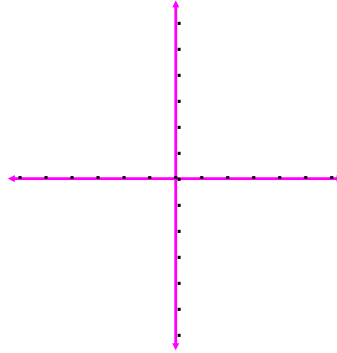Ex 1: Eliminate the parameter in this system of equations from the previous lecture.

$$\begin{cases} x = 2t + 1 \\ y = t^2 - 2 \end{cases} \quad t \geq -2$$

If the parametric equations have trigonometric expressions, using one of the Pythagorean Identities might be useful.

Ex 2: Eliminate the parameter in this set of equations and sketch the curve.

$$\begin{cases} x = 2\cos t \\ y = 1 + 3\sin t \end{cases} \quad 0 \le t \le \frac{3\pi}{2}$$

Ex 3: Find a parameterization for each of these equations and sketch each one.

a) $3x - y^2 = 2$ from $x = -2$ to $x = 3$ b) $x^2 - 2x + y^2 + 4y = 4$