

10.1 - Curves Defined by Parametric Equations

10.1a

Typical forms of parametric equations

$$x = f(t), y = g(t)$$

$$\text{OR } x = f(\theta), y = g(\theta)$$

Exercises:

- (a) Sketch the curve by using the parametric equations to plot points. Indicate with an arrow the direction in which the curve is traced as t increases.
- (b) Eliminate the parameter to find a Cartesian equation of the curve.

$$x = 3t + 2, y = 2t + 3$$

$$x = t^2, y = 1 - t$$

10.1b

Exercises:

- (a) Eliminate the parameter to find a Cartesian equation of the curve.
- (b) Sketch the curve and indicate with an arrow the direction in which the curve is traced as the parameter increases.

$$x = \sqrt{t+1}, y = \sqrt{t-1}$$

$$x = \tan^2 \theta, y = \sec \theta, -\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$$

10.1c

Parametric equations of a cycloid

$$x = r(\theta - \sin \theta), y = r(1 - \cos \theta)$$