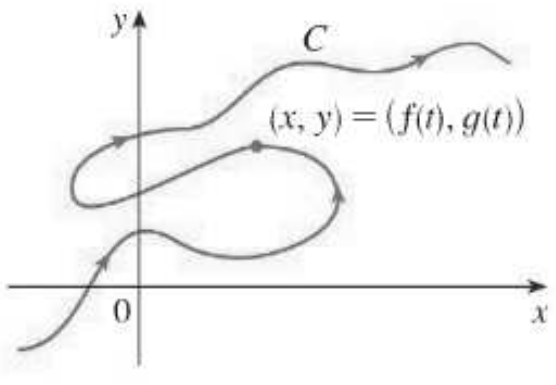
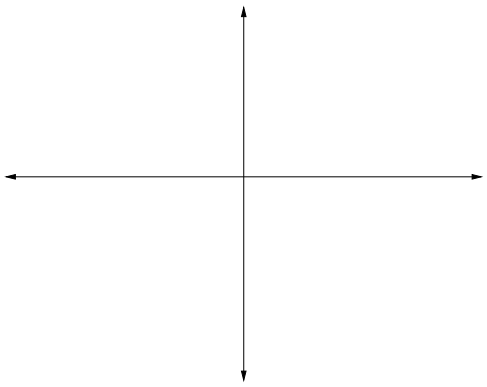
Section 10.1: Curves Defined by Parametric Equations

Parametric Curves: Suppose a particle is moving along the curve C as shown below. We call $x = f(t)$ and $y = g(t)$ parametric equations, where t is the parameter. As t varies over its domain, we get a collection of points $(x, y) = (f(t), g(t))$ which traces out the parametric curve.

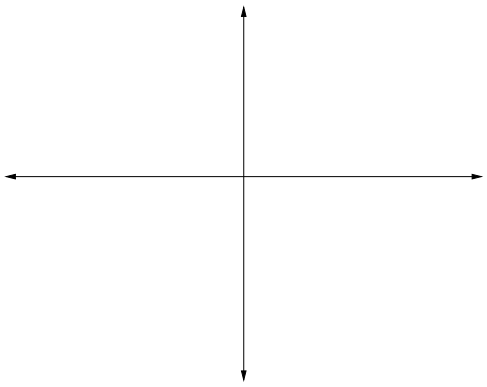


Sketch the parametric curves described below. Indicate with an arrow the direction in which the curve is traced out as t increases.

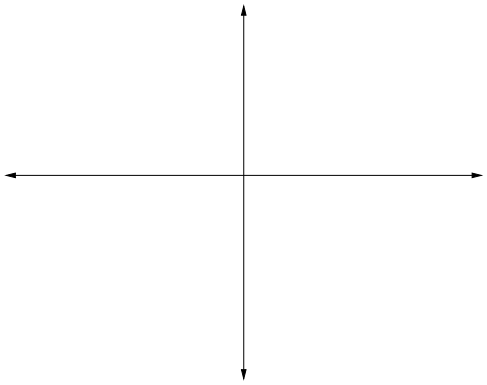
1. $x = t - 3$, $y = 2t - 1$



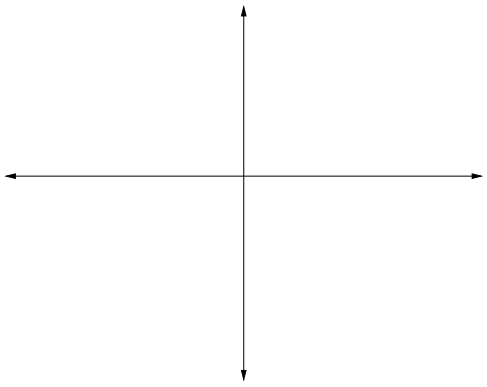
2. $x = t + 1$, $y = t^2 - 4$



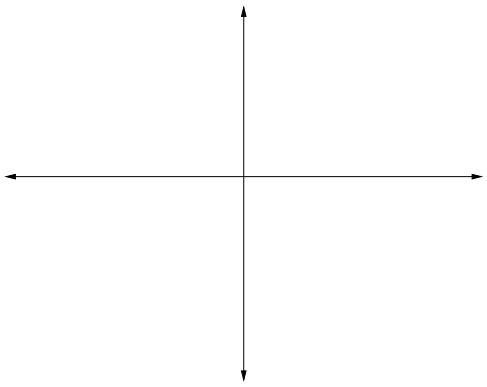
3. $x = 4 - t$, $y = \sqrt{t}$



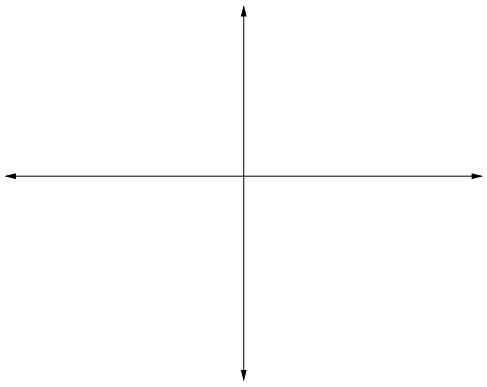
4. $x = 2\sin\theta$, $y = 2\cos\theta$



5. $x = 3\cos\theta$, $y = 2\sin\theta$, $0 \leq \theta \leq \pi$



6. $x = \sin t$, $y = \csc t$, $\dfrac{\pi}{6} \leq t < \dfrac{\pi}{2}$



7. $x = 2 + \cos t$, $y = 1 + \sin t$, $0 \leq t \leq \dfrac{\pi}{2}$