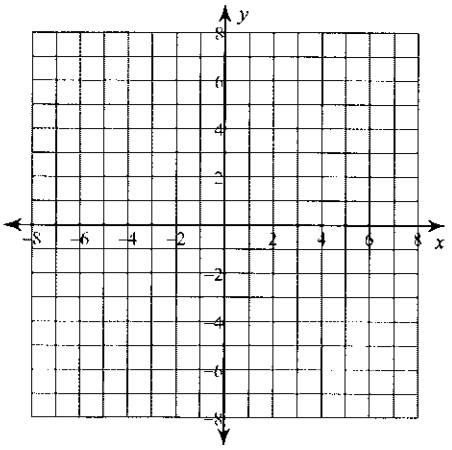
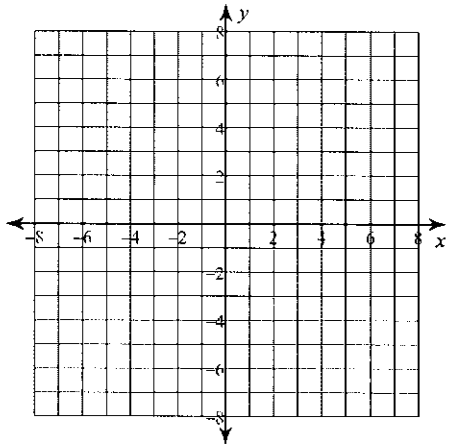
Parametric Equations

Sketch the curve for each pair of parametric equations.

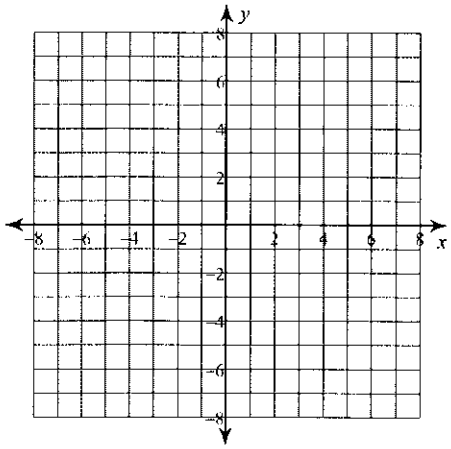
1) $x = t,\ y = \dfrac{t^2}{4}$



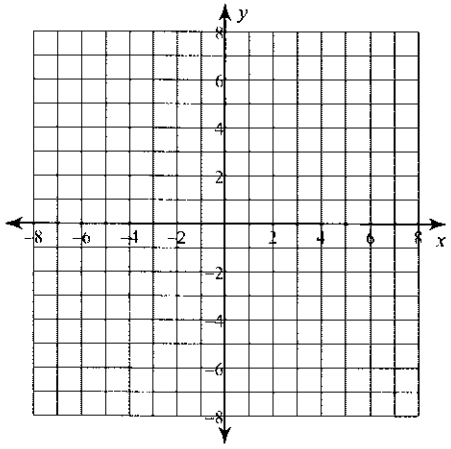
2) $x = -2t + 2,\ y = \dfrac{4t^2}{5} - 2,\ -2 \le t \le 3$



3) $x = 5\sin t,\ y = 4\cos t$



4) $x = 2\sec t,\ y = 4\tan t$



Write each pair of parametric equations in rectangular form.

5) $x = -\frac{t^2}{3},\ y = t$

6) $x = t,\ y = \frac{t^2}{6} + \frac{2t}{3} - \frac{1}{3}$

7) $x = -2t - 3,\ y = 2t^2 + 2t - \frac{5}{2}$

8) $x = 2\sin t,\ y = 4\cos t$

9) $x = \sec t,\ y = 4\tan t$

10) $x = 4\cos t - 1,\ y = 3\sin t + 1$

Use the parameter to write each rectangular equation as a pair of parametric equations.

11) $x = \frac{y^2}{6},\ t = y$

12) $y = -\frac{x^2}{4} + x + 1,\ t = -\frac{x}{3} + \frac{1}{3}$

Critical thinking questions:

13) Write a set of parametric equations that represent $y = x^2 - 4x$. Then write a second set of parametric equations that represent the same function, but with a slower speed

14) Write a set of parametric equations that represent $y = x^2 - 1$. Then write a second set of parametric equations that represent the same function, but with a faster speed and an opposite orientation.