

Assignment

Date _____ Period _____

Write each pair of parametric equations in rectangular form.

1) $x = 5\cos t, y = 5\sin t$

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

**Sketch the curve for each pair of parametric equations. # 3 and 4 without a calculator.
#5 use a calculator**

3) $x = -\frac{t^2}{3} + \frac{2t}{3} + \frac{11}{3}, y = t$

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

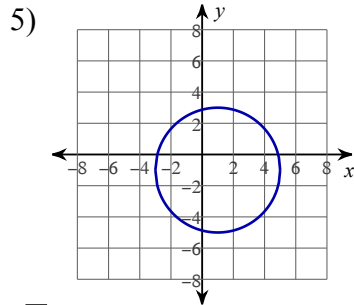
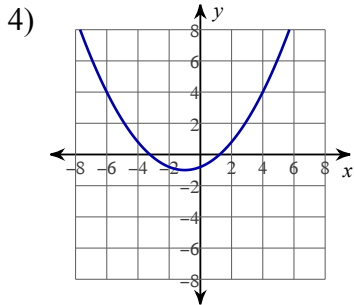
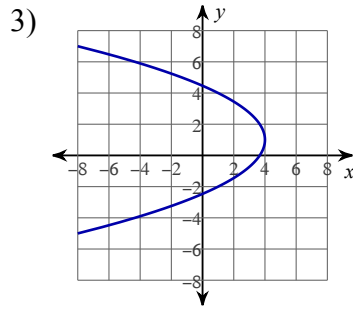
5) $x = 4\sin t + 1, y = 4\cos t - 1$

- 6) A cannon ball is fired across a flat field at an angle of 60° with an initial speed of 37 m/s and an initial height of 14 m.
- Write a set of parametric equations for the motion of the cannon ball.
 - Determine how long the cannon ball was in the air.
 - Determine how far the cannon ball traveled in the air.
 - Determine when the cannon ball reached its maximum height.
 - Determine the maximum height reached by the cannon ball.
- 7) A soccer ball is kicked across a field at an angle of 60° with an initial speed of 57 ft/s.
- Write a set of parametric equations for the motion of the soccer ball.
 - Determine how long the soccer ball was in the air.
 - Determine how far the soccer ball traveled in the air.
 - Determine when the soccer ball reached its maximum height.
 - Determine the maximum height reached by the soccer ball.

Answers to Assignment (ID: 1)

1) $\frac{x^2}{25} + \frac{y^2}{25} = 1$

2) $y = \frac{x^2}{4}$



6) i) $x = \frac{37t}{2}$, $y = 14 - \frac{9.8t^2}{2} + \frac{37t\sqrt{3}}{2}$

ii) 6.95 s

iii) 128.58 m

iv) 3.27 s

v) 66.39 m

7) i) $x = \frac{57t}{2}$, $y = -\frac{32.17t^2}{2} + \frac{57t\sqrt{3}}{2}$

ii) 3.07 s

iii) 87.46 ft

iv) 1.53 s

v) 37.87 ft