Unit 10 (Chapter 6): Parametric & Polar   **Pre-Calculus 2016-2017**

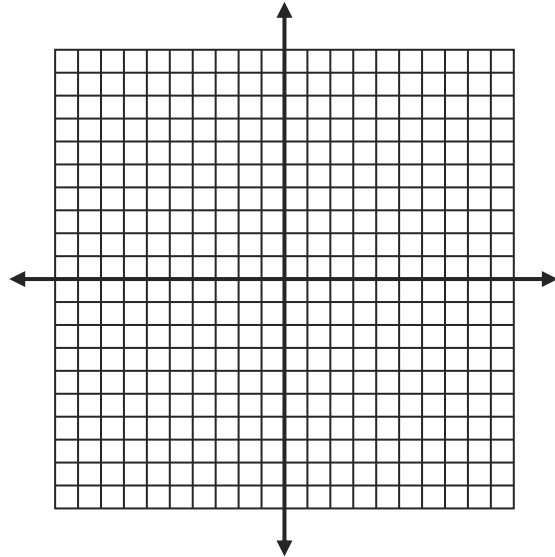## 6.3 Parametric Equations Practice
Target 10A: Define and Graph Parametric Equations
Target 10B: Perform Parametric/Rectangular Conversions

1. a) Make a table of values and sketch the curve, indicating the direction of your graph.

$$x(t) = 1 - 2t, y(t) = 2 - t$$

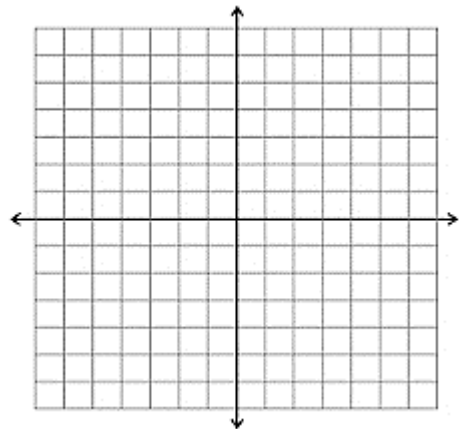| t	x	y

b) Eliminate the parameter of the equations above and give the resulting rectangular equation.

2. a) Make a table of values and sketch the curve, indicating the direction of your graph.

$$x(t) = t + 2,$$
$$y(t) = \frac{4}{t},$$
$$t \geq 2$$

t	x	y

b) Eliminate the parameter of the equations above and give the resulting rectangular equation.

3. ⊞ Using your graphing calculator, graph the parametric equations:
$$x(t) = \cos t, \quad y(t) = \sin t$$

What does the graph look like?

4. ⊞ Using your graphing calculator, graph the parametric equations:
$$x(t) = 2\sin t, \quad y(t) = 4\cos t$$

What does the graph look like?

Determining a Rectangular Equation for Given Parametric Trig Equations
- Use a trig identity to help convert ($i.e.$, $\sin^2 \theta + \cos^2 \theta = 1$)
- Solve the parametric equations for the trig functions in the trig identity & sub into trig identity.
- Rewrite the rectangular equation into a recognizable equation.

Example 1: Write the parametric equations in rectangular form.
$$x(t) = \frac{1}{2}\cos t, \quad y(t) = \frac{1}{2}\sin t$$

Example 2: Write the parametric equations in rectangular form.
$$x(t) = 2\sin t, \quad y(t) = 4\cos t$$

Example 3: Write the parametric equations in rectangular form.
$$x(t) = 3\cos t - 1, \quad y(t) = 2\sin t + 4$$

More Practice

Parametric Equations
http://tutorial.math.lamar.edu/Classes/CalcII/ParametricEqn.aspx
https://www.khanacademy.org/math/algebra-home/alg-trig-functions/alg-parametric/v/parametric-equations-1
https://people.richland.edu/james/lecture/m116/conics/parametric.html
https://www.varsitytutors.com/hotmath/hotmath_help/topics/parametric-equations
https://youtu.e/9kKZHQtYP7g
https://youtu.be/tsnHL1Lb5MU
https://youtu.be/lTOSslFAl18

Homework Assignment
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