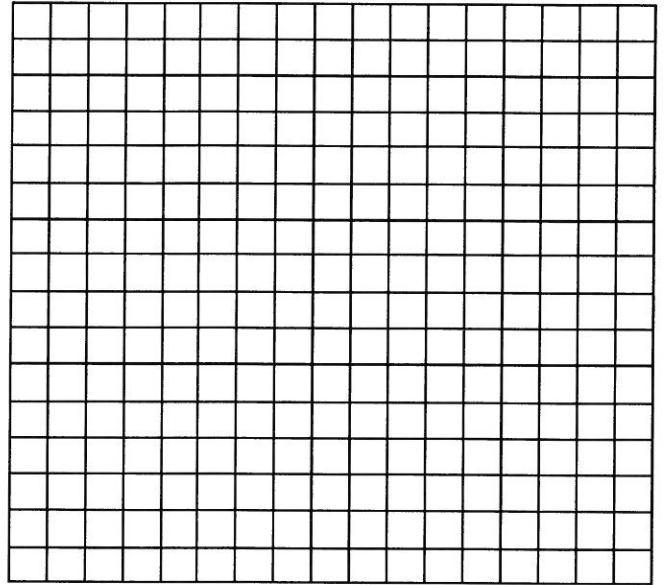


Unit 8 Review #3 – Parametric Equations

1. Graph each of the following parametric equations.

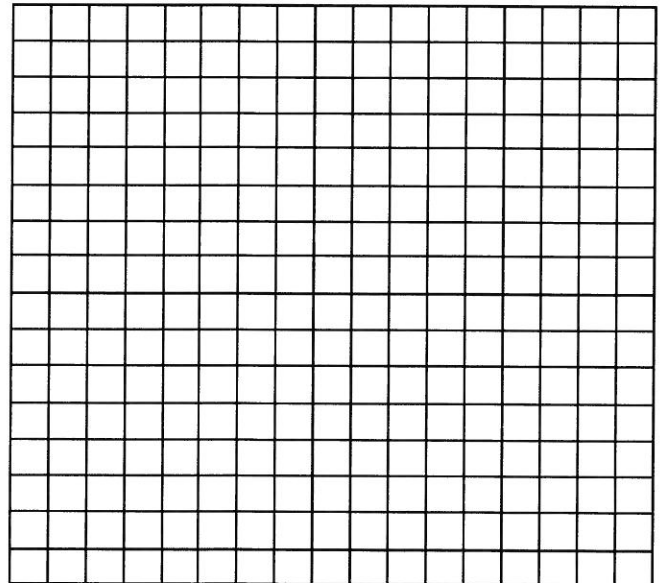
a.
$$\begin{cases} x = 2t - 3 \\ y = t - 1 \end{cases} \quad -3 \leq t \leq 3$$

t	x	y
-3		
-2		
-1		
0		
1		
2		
3		



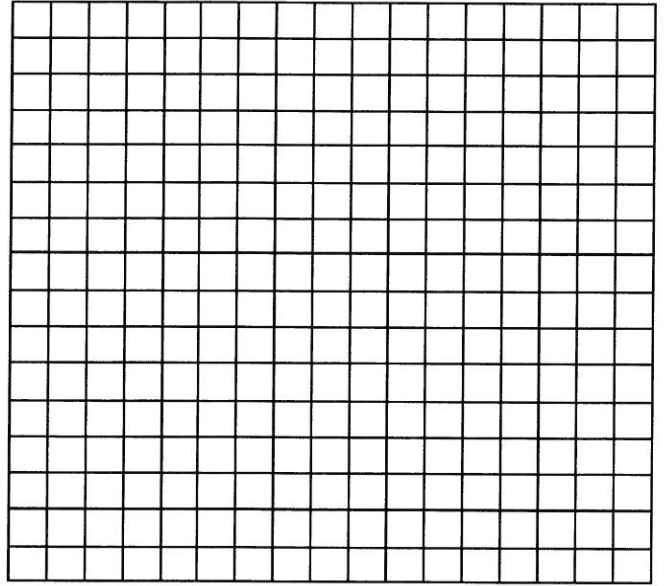
b.
$$\begin{cases} x = t^2 \\ y = 2t + 1 \end{cases} \quad -3 \leq t \leq 3$$

t	x	y
-3		
-2		
-1		
0		
1		
2		
3		



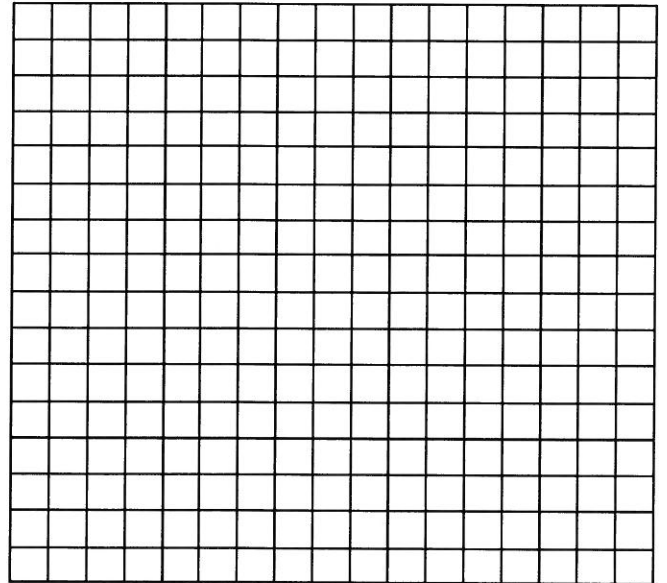
$$c. \begin{cases} x = t - 1 \\ y = t^2 - 4 \end{cases} \quad -3 \leq t \leq 3$$

t	x	y
-3		
-2		
-1		
0		
1		
2		
3		



$$d. \begin{cases} x = 4 \sin(t) + 2 \\ y = 4 \cos(t) - 1 \end{cases} \quad 0 \leq t \leq \pi$$

t	x	y
0		
$\frac{\pi}{2}$		
π		



2. Eliminate the parameter for each of the following parametric equations.

a.
$$\begin{cases} x = t \\ y = -2t - 3 \end{cases}$$

b.
$$\begin{cases} x = t^2 \\ y = 2t^2 \end{cases}$$

3. Find a pair of parametric equations using the parameters $t = x$ and $t = x + 4$.

a. $y = 4x - 1$

b. $y = 2(x - 4)^2 - 6$

4. Write a pair of parametric equations for a circle with a center at $(2, -4)$ and a radius of 8.

5. Write a pair of parametric equations for a line that passes through $(2, 5)$ and $(6, 10)$.

6. Write a pair of parametric equations for a line that passes through $(-5, 8)$ and is parallel to $y = -2x + 5$

7. Write a pair of parametric equations for each of the following.

a.
$$\frac{(x+2)^2}{25} + \frac{(y-2)^2}{4} = 1$$

b.
$$(x+2)^2 + (y-7)^2 = 144$$

$$\text{c. } \frac{(x-7)^2}{4} - \frac{(y+5)^2}{9} = 1$$

$$\text{d. } \frac{(y+3)^2}{1} - \frac{(x+3)^2}{4} = 1$$

8. Eliminate the parameter in each of the following parametric equations.

$$\text{a. } \begin{cases} x = 3 \cos(t) - 5 \\ y = 2 \sin(t) + 6 \end{cases}$$

$$\text{b. } \begin{cases} x = 6 \sin(t) - 1 \\ y = 6 \cos(t) + 3 \end{cases}$$

$$\text{c. } \begin{cases} x = 2 \tan(t) - 8 \\ y = 7 \sec(t) + 2 \end{cases}$$

$$\text{d. } \begin{cases} x = 3 \csc(t) - 2 \\ y = 5 \cot(t) + 3 \end{cases}$$

9. Elmo the robot leaves $(2, 10)$ and travels to $(8, 7)$ in 6 seconds. Grover the robot goes from $(4, 5)$ to $(10, 9)$ in 4 seconds.

a. Write a pair of parametric equations for Elmo and Grover.

b. Do the robots cross paths? If so, where?

c. Do Elmo and Grover collide?