

Parametric Equations: $x = 5t - 2$, $y = 3t - 1$

a) Graph Parametric Equations.

b) Write the corresponding rectangular equation.

$$x = 5t - 2 \quad \Leftrightarrow \quad x - 2 = 5t \quad \Leftrightarrow \quad t = \frac{x - 2}{5}$$

$$y = 3t - 1 \quad \Leftrightarrow \quad y = 3\left(\frac{x - 2}{5}\right) - 1 \quad \Leftrightarrow \quad y = 3\left(\frac{x - 2}{5}\right) - 1$$

$$\text{Rectangular Equation: } y = 3\left(\frac{x - 2}{5}\right) - 1$$

Calculator Input:

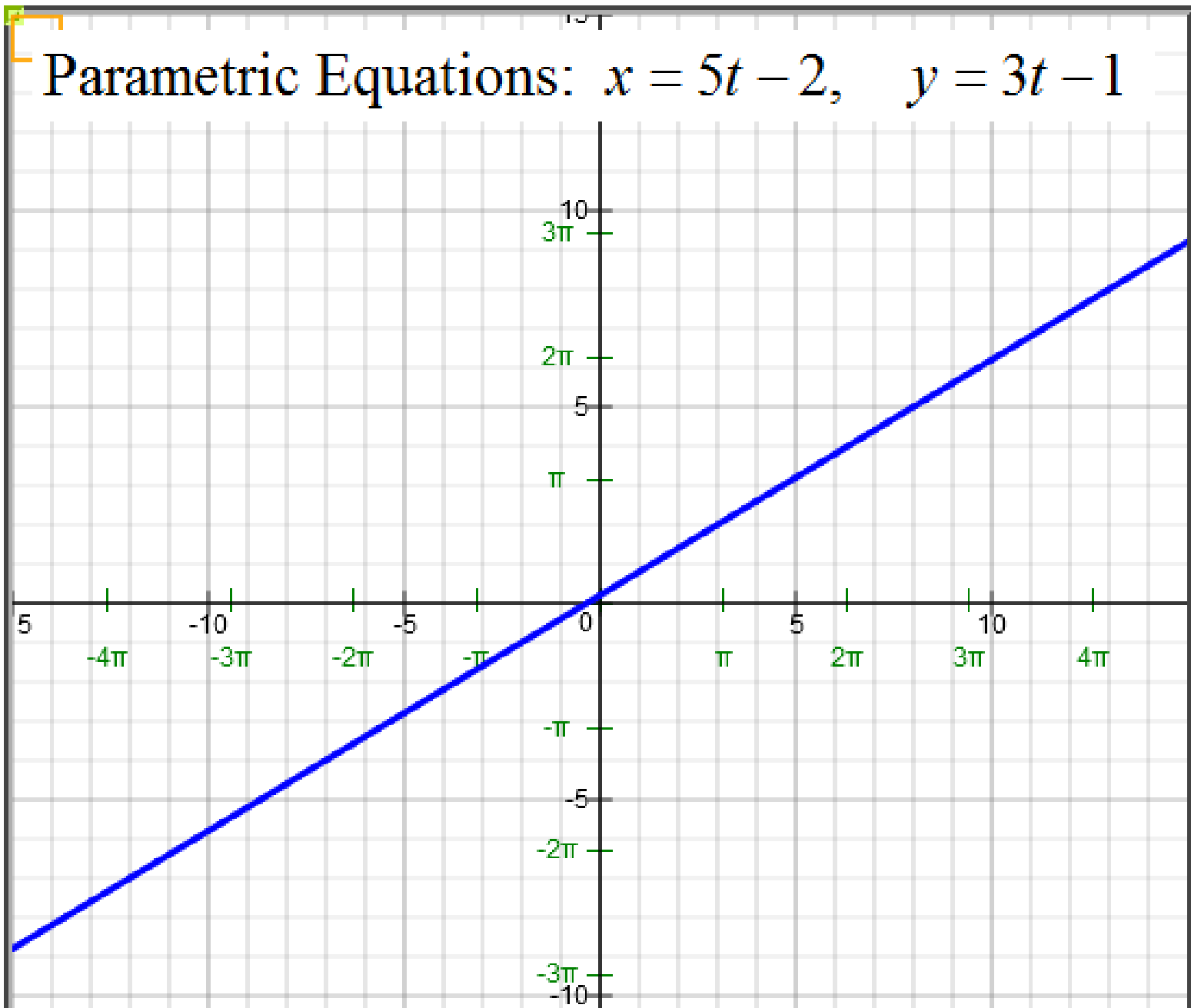
Parametric Equations [Video](#) on/off

$T_{\min} = -10$ $T_{\max} = 10$ $T_{\text{stepsize}} = 0.1$

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$X(t) = 5t - 2$ 1 on/off

$Y(t) = 3t - 1$ 1



Parametric Equations: $x = 4t - 4$, $y = t^2 + 5$

a) Graph Parametric Equations.

b) Write the corresponding rectangular equation.

$$x = 4t - 4 \quad \Leftrightarrow \quad x + 4 = 4t \quad \Leftrightarrow \quad t = \frac{x + 4}{4}$$

$$y = t^2 + 5 \quad \Leftrightarrow \quad y = \left(\frac{x + 4}{4} \right)^2 + 5$$

$$\text{Rectangular Equation: } y = \left(\frac{x + 4}{4} \right)^2 + 5$$

Calculator Input:

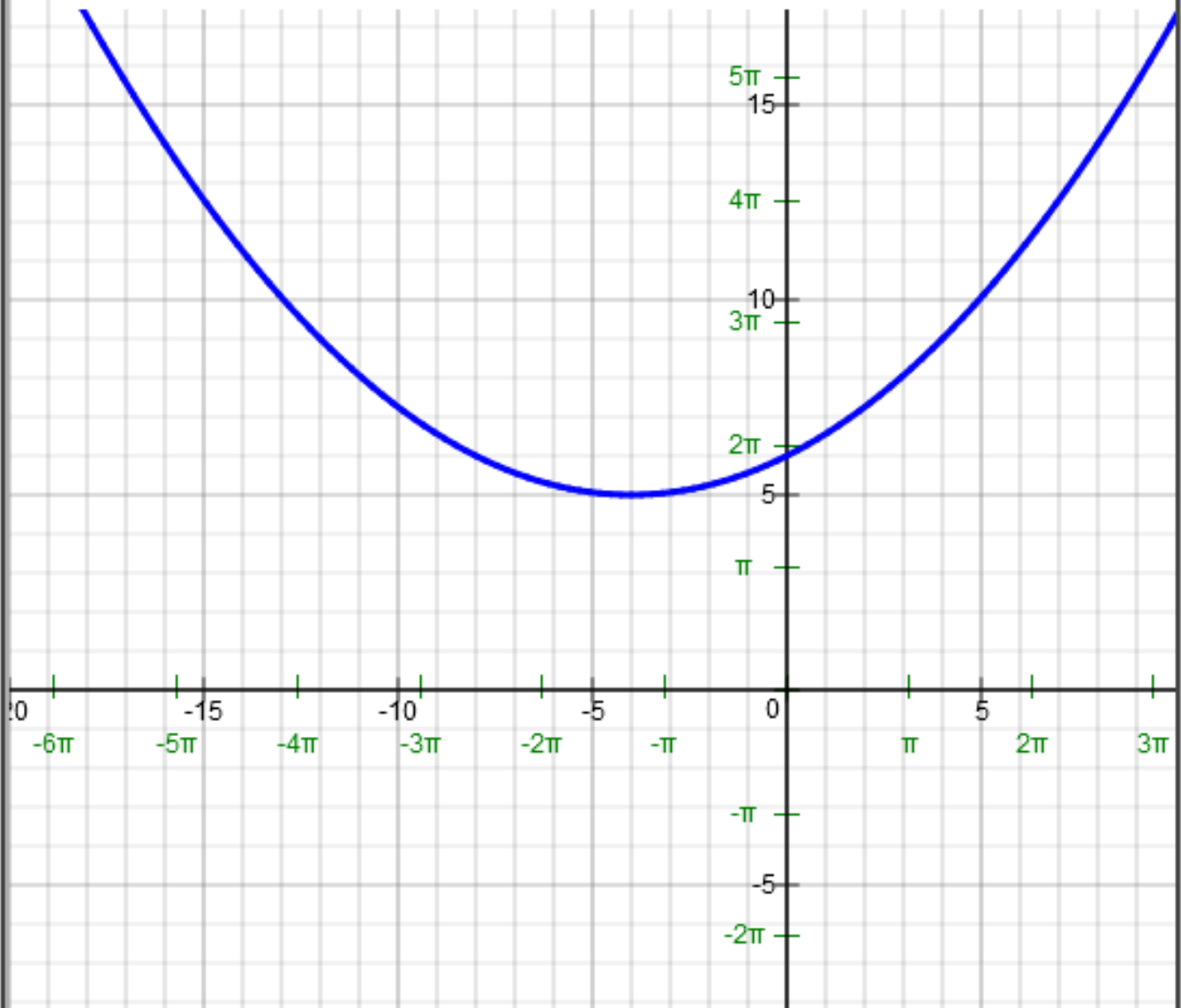
Parametric Equations [Video](#) on/off

Tmin = Tmax = Tstepsize =

X(t) = on/off

Y(t) =

Parametric Equations: $x = 4t - 4$, $y = t^2 + 5$



Parametric Equations: $x = 5t^2$, $y = t^3 - 6$

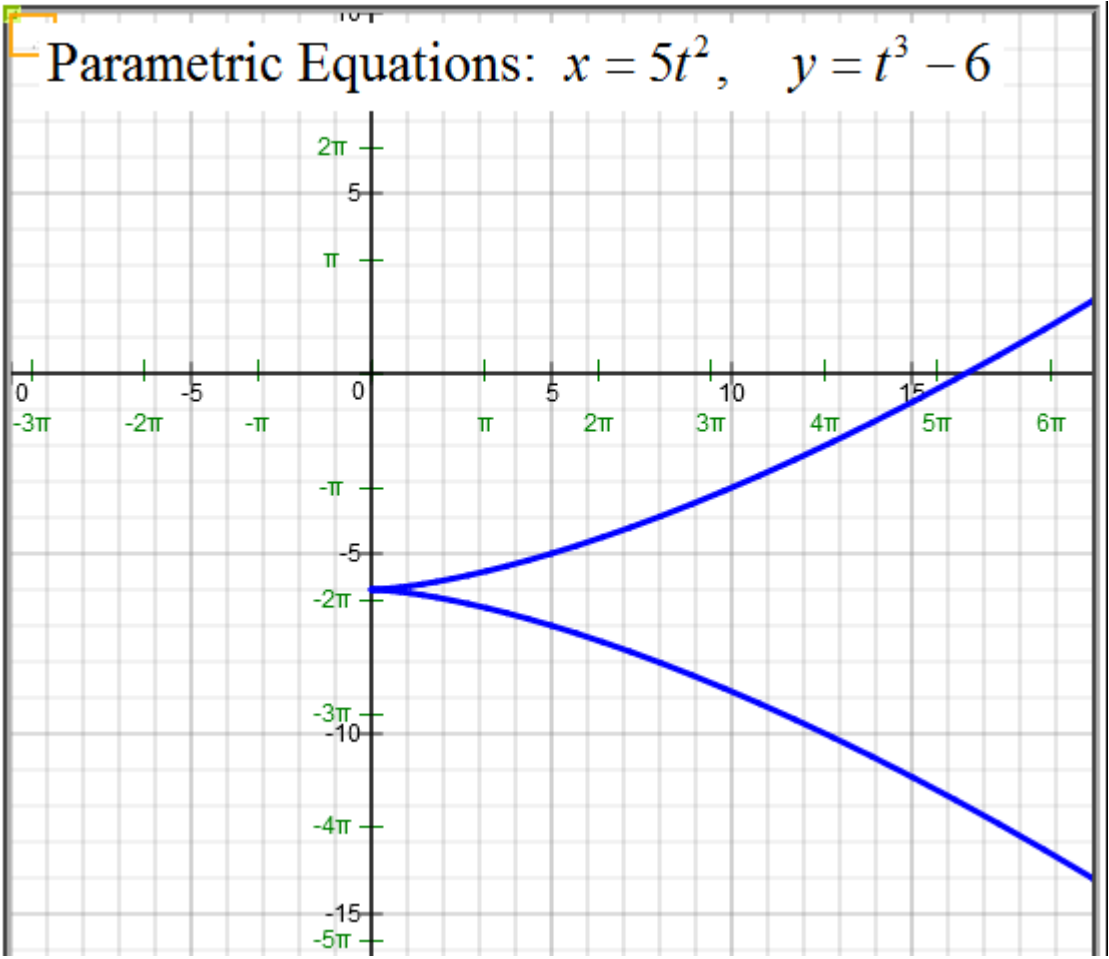
a) Graph Parametric Equations.

b) Write the corresponding rectangular equation.

$$x = 5t^2 \quad \Leftrightarrow \quad t^2 = \frac{x}{5} \quad \Leftrightarrow \quad t = \pm \sqrt{\frac{x}{5}} \quad \Leftrightarrow$$

$$y = t^3 - 6 \quad \Leftrightarrow \quad y = \left(\pm \sqrt{\frac{x}{5}} \right)^3 - 6$$

$$\text{Rectangular Equation: } y = \left(\pm \sqrt{\frac{x}{5}} \right)^3 - 6$$



Parametric Equations: $x = \sqrt{t + 4}$, $y = t + 1$

a) Graph Parametric Equations.

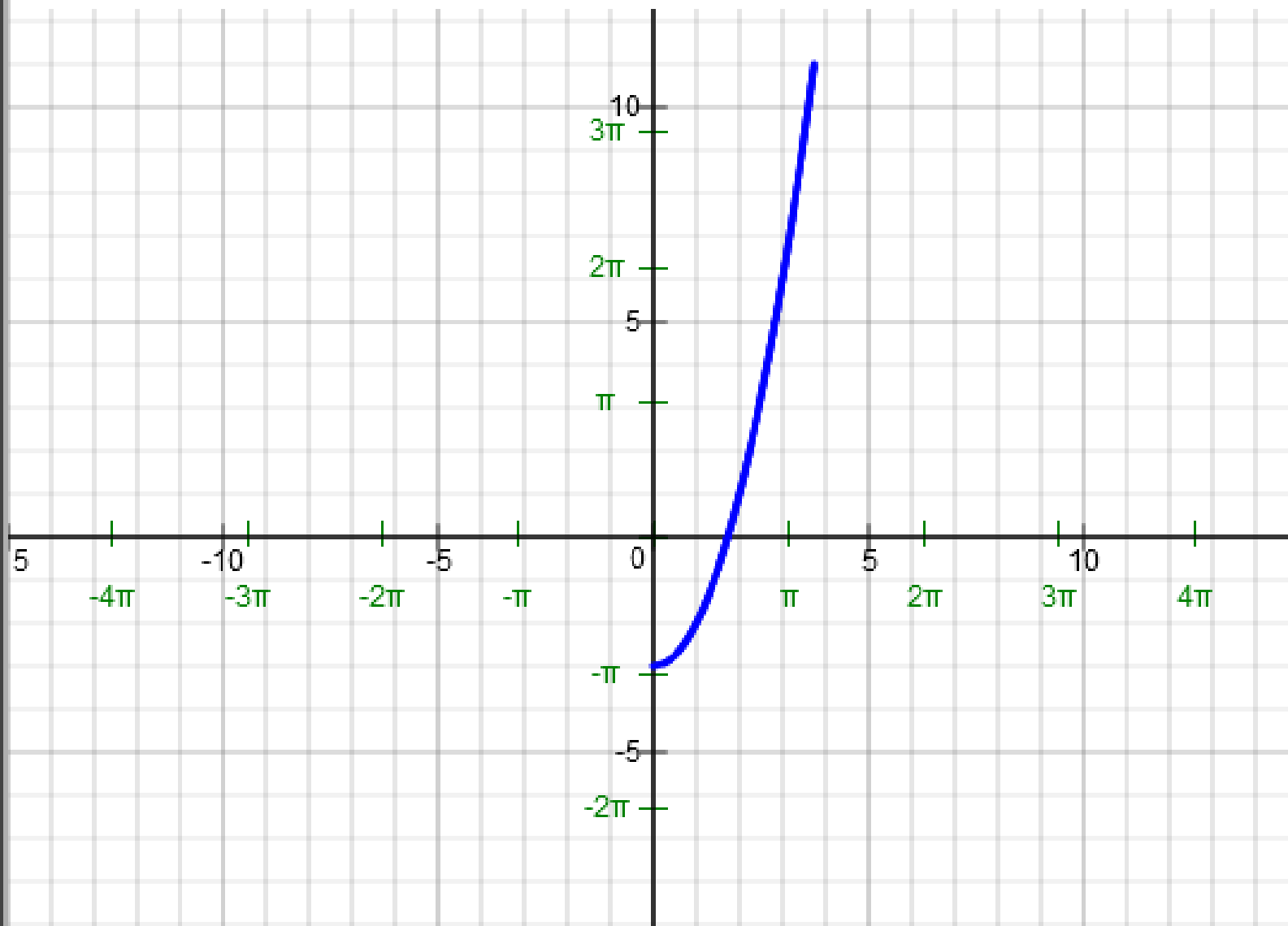
b) Write the corresponding rectangular equation.

$$x = \sqrt{t + 4} \quad \Leftrightarrow \quad (x)^2 = (\sqrt{t + 4})^2 \quad \Leftrightarrow \quad x^2 = t + 4 \quad \Leftrightarrow \quad t = x^2 - 4$$

$$y = t + 1 \quad \Leftrightarrow \quad y = x^2 - 4 + 1 \quad \Leftrightarrow \quad y = x^2 - 3$$

Rectangular Equation: $y = x^2 - 3$

Parametric Equations: $x = \sqrt{t+4}$, $y = t+1$



Parametric Equations: $x = t + 7$, $y = \frac{t}{t - 4}$

a) Graph Parametric Equations.

b) Write the corresponding rectangular equation.

$$x = t + 7 \quad \Leftrightarrow \quad t = 7 - x$$

$$y = \frac{t}{t - 4} \quad \Leftrightarrow \quad y = \frac{(7 - x)}{(7 - x) - 4} \quad \Leftrightarrow \quad y = \frac{7 - x}{3 - x}$$

Rectangular Equation: $y = \frac{7 - x}{3 - x}$

Calculator Input:

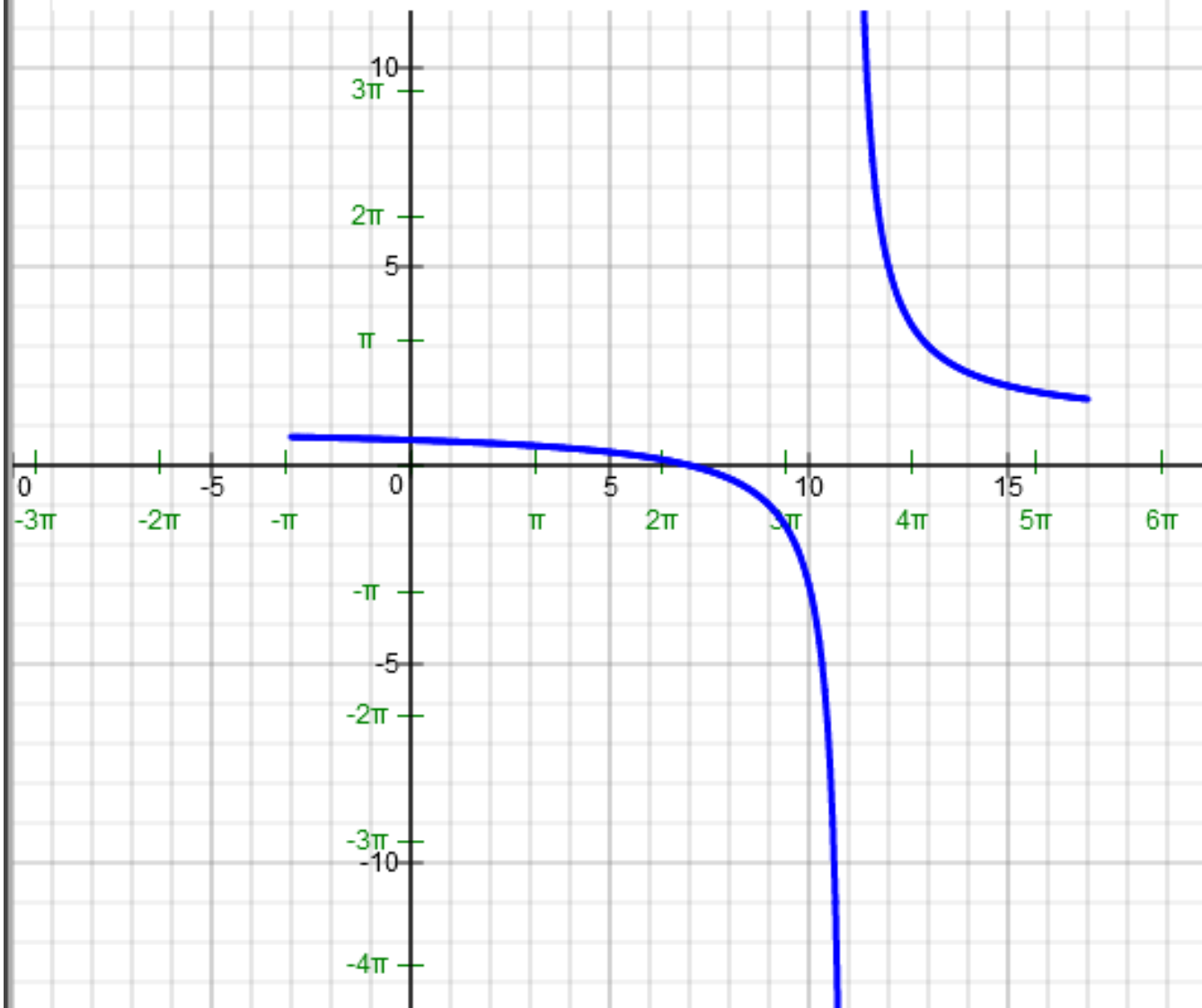
Parametric Equations [Video](#) on/off

Tmin = Tmax = Tstepsize =

X(t) = on/off

Y(t) =

Parametric Equations: $x = t + 7$, $y = \frac{t}{t-4}$



Parametric Equations: $x = 5t + 4$, $y = |3t - 2|$

a) Graph Parametric Equations.

b) Write the corresponding rectangular equation.

$$x = 5t + 4 \quad \Leftrightarrow \quad x - 4 = 5t \quad \Leftrightarrow \quad t = \frac{x - 4}{5}$$

$$y = |3t - 2| \quad \Leftrightarrow \quad y = \left| 3 \left(\frac{x - 4}{5} \right) - 2 \right|$$

$$\text{Rectangular Equation: } y = \left| 3 \left(\frac{x - 4}{5} \right) - 2 \right|$$

Calculator Input:

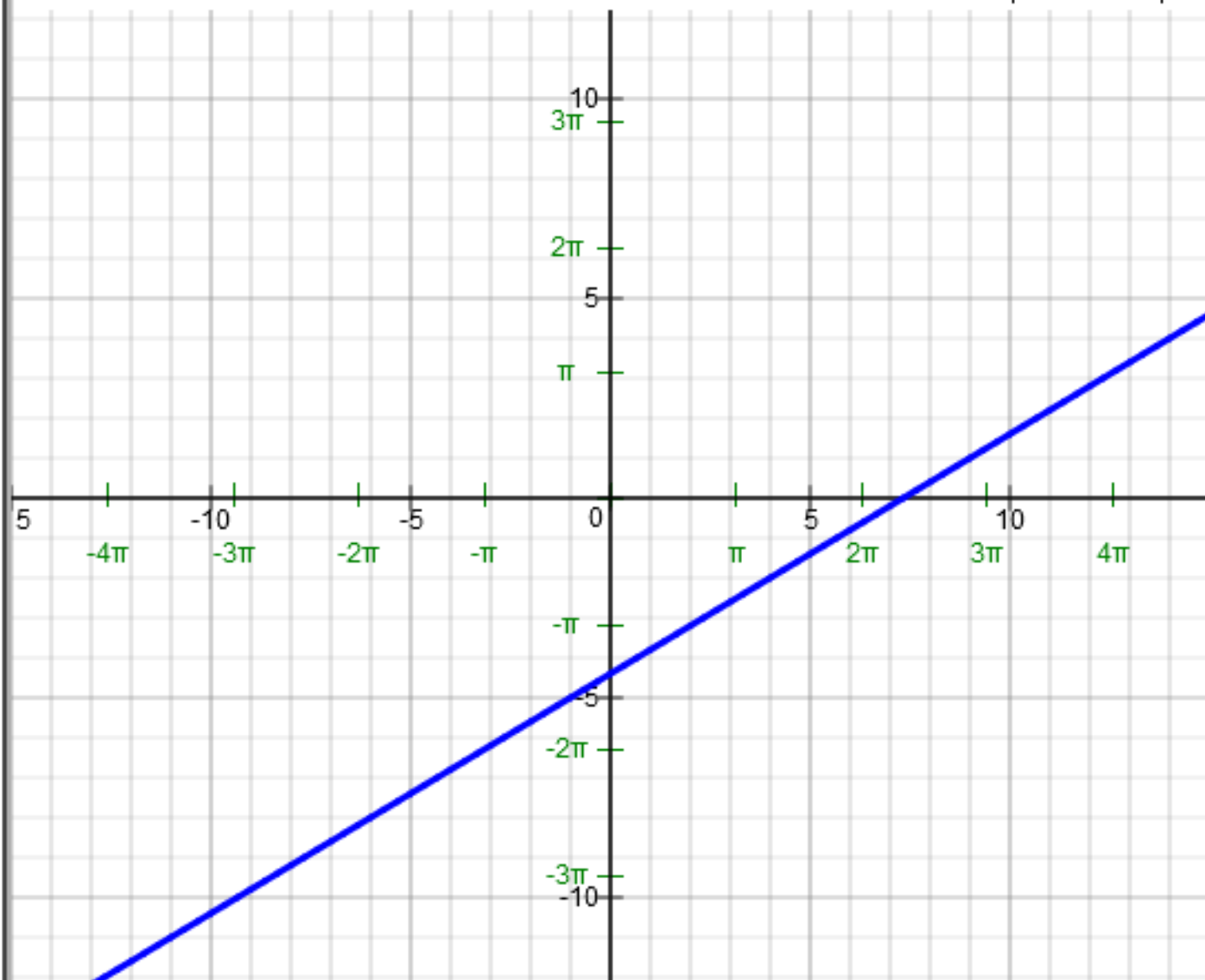
Parametric Equations [Video](#) on/off

Tmin = Tmax = Tstepsize =

X(t) = on/off

Y(t) =

Parametric Equations: $x = 5t + 4$, $y = |3t - 2|$



Parametric Equations: $x = e^t - 4$, $y = e^{3t} + 1$

a) Graph Parametric Equations.

b) Write the corresponding rectangular equation.

$$x = e^t - 4 \quad \Leftrightarrow \quad x + 4 = e^t$$

$$y = e^{3t} + 1 \quad \Leftrightarrow \quad y = (e^t)^3 + 1 \quad \Leftrightarrow \quad y = (x + 4)^3 + 1$$

Rectangular Equation: $y = (x + 4)^3 + 1$

Calculator Input

Parametric Equations [Video](#) on/off

Tmin = Tmax = Tstepsize =

Example

Submit

clear

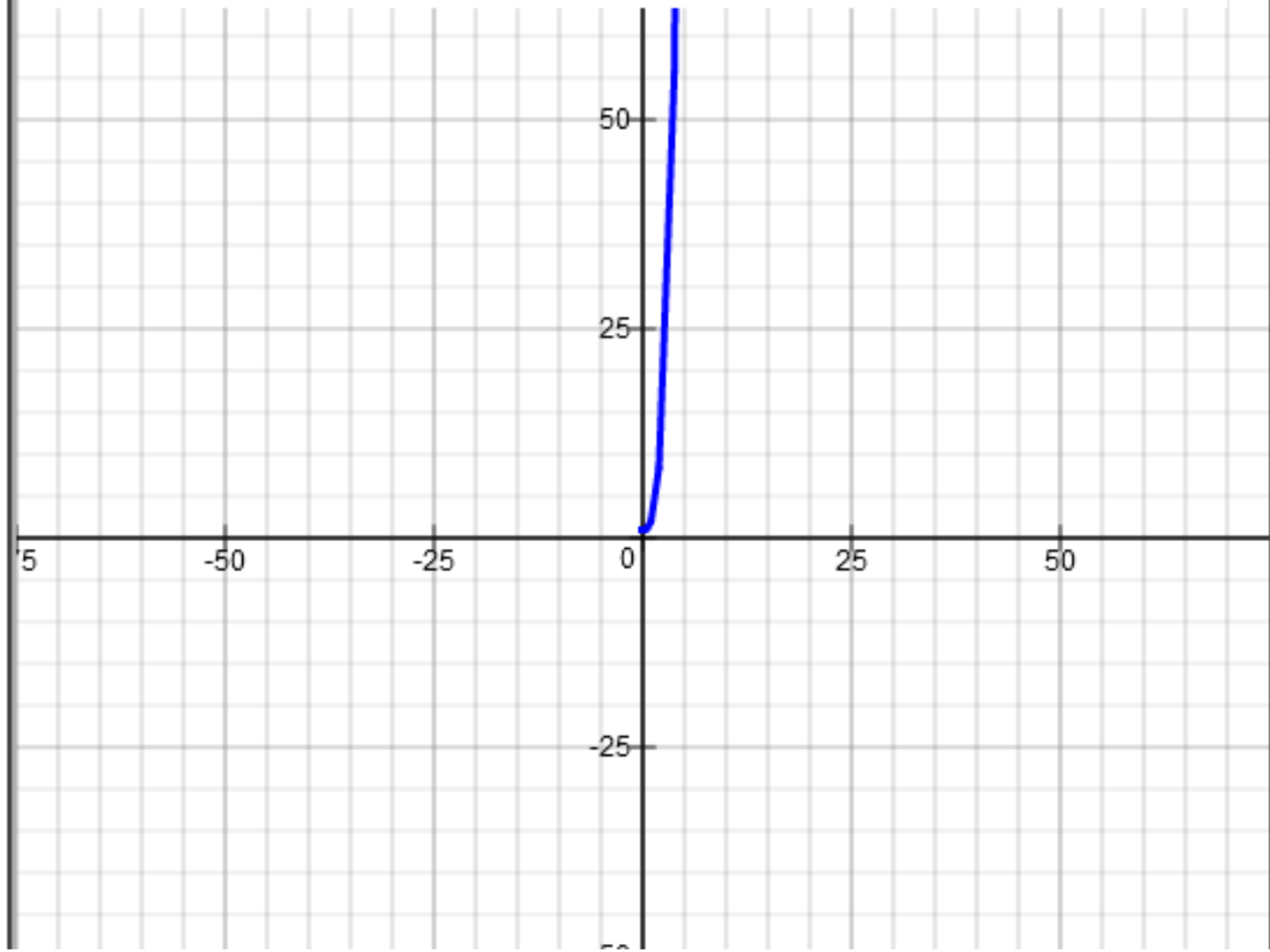
Table of Values

Tracing Graph

X(t) = on/off

Y(t) =

Parametric Equations: $x = e^t - 4$, $y = e^{3t} + 1$



Parametric Equations: $x = \sec t$, $y = 5 \tan t$

a) Graph Parametric Equations.

b) Write the corresponding rectangular equation.

$$x = \sec t$$

$$y = 5 \tan t \quad \Leftrightarrow \quad \tan t = \frac{y}{5}$$

From Trigonometric Identity: $\sec^2 x - \tan^2 x = 1$

$$\sec^2 x - \tan^2 x = 1 \quad \Leftrightarrow \quad x^2 - \left(\frac{y}{5}\right)^2 = 1$$

$$\text{Rectangular Equation: } x^2 - \left(\frac{y}{5}\right)^2 = 1$$

Calculator Input

Parametric Equations [Video](#) on/off

Tmin = $-\pi$

Tmax = π

Tstepsize = **0.1**

Example

Submit

clear

Table of Values

Tracing Graph

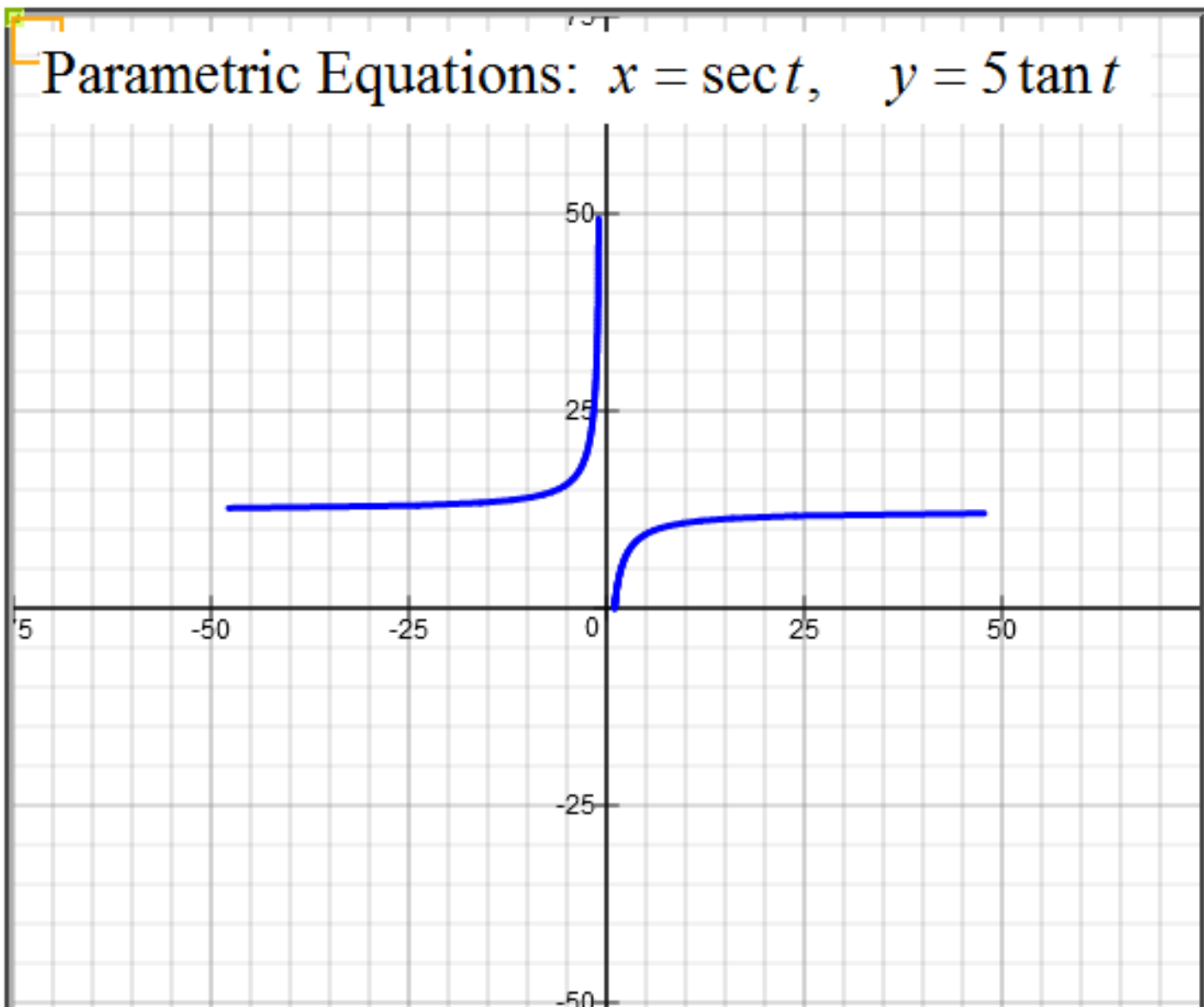
X(t) = **sec(t)**

1

on/off

Y(t) = **5tan(t)**

1



Parametric Equations: $x = 2 + 2\cos t$, $y = 3 + \sin t$

- a) Graph Parametric Equations.
- b) Write the corresponding rectangular equation.

Calculator Input

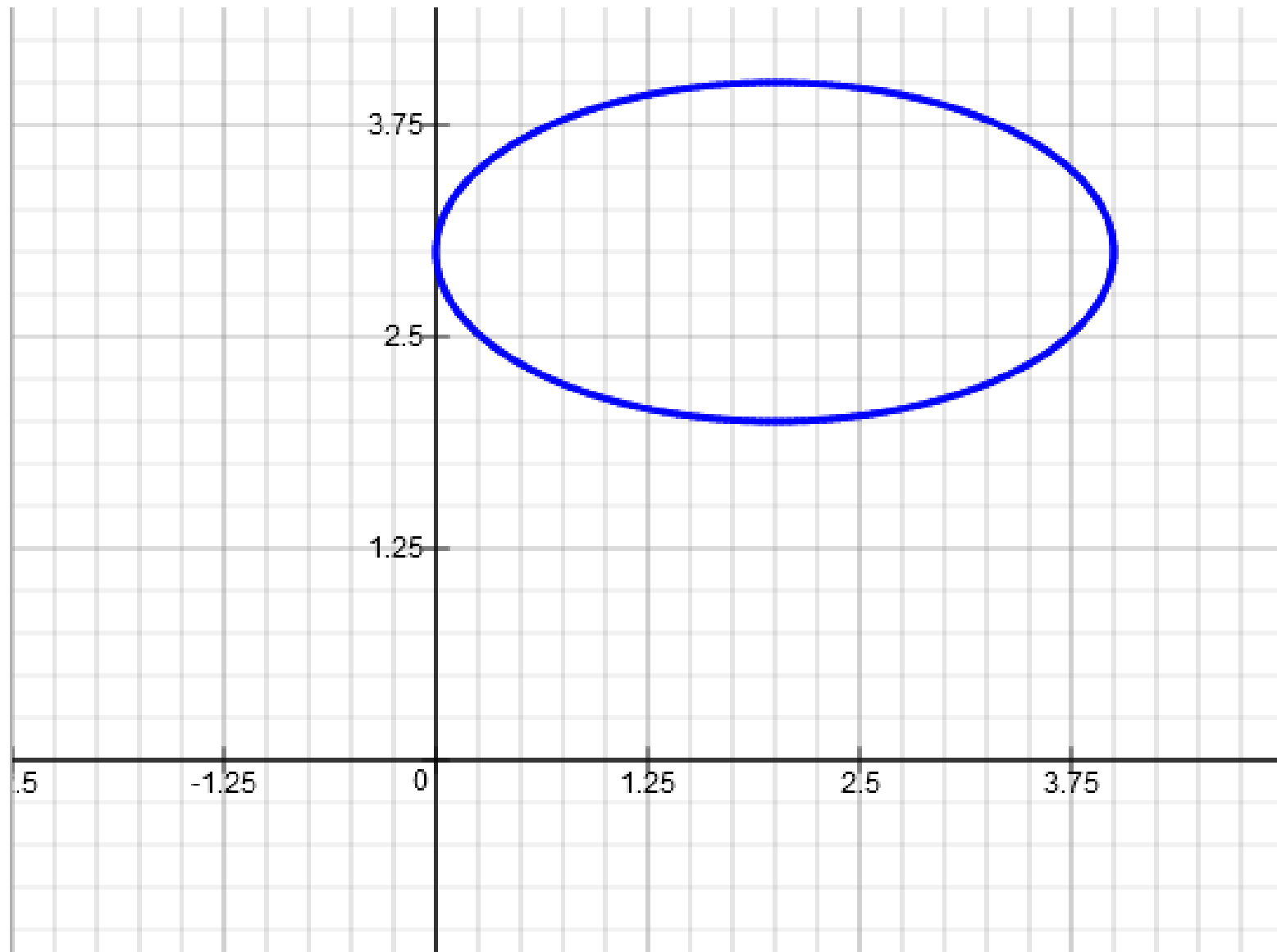
Parametric Equations [Video](#) on/off

Tmin = Tmax = Tstepsize =

X(t) = on/off

Y(t) =

Parametric Equations: $x = 2 + 2 \cos t$, $y = 3 + \sin t$



Parametric Equations: $x = t^2$, $y = 4 \ln t$

a) Graph Parametric Equations.

b) Write the corresponding rectangular equation.

$$x = t^2 \quad \Leftrightarrow \quad t = \pm\sqrt{x}$$

$$y = 4 \ln t \quad \Leftrightarrow \quad y = 4 \ln(\sqrt{x})$$

$$\text{Rectangular Equation: } y = 4 \ln(\sqrt{x})$$

Calculator Input:

Parametric Equations [Video](#) on/off

Tmin = Tmax = Tstepsize =

X(t) = on/off

Y(t) =

