

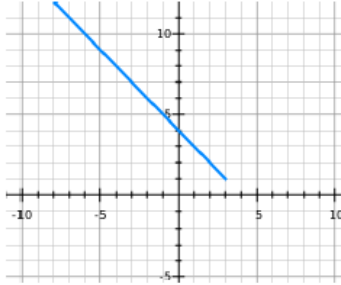
Bridge to Calculus 1 Parametric Practice

1. Sketch the graph determined by the parametric equations. In what direction is the graph traced out as the value of t increases?

$$x = 3 - 2t$$

$$y = 1 + 2t$$

Ans: Linearly, up to the left

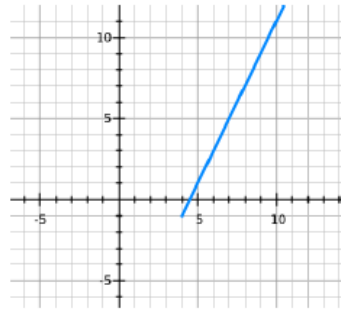


2. Sketch the graph determined by the parametric equations. In what direction is the graph traced out as the value of t increases?

$$x = t + 4$$

$$y = 2t - 1$$

Ans: Linearly up to the right

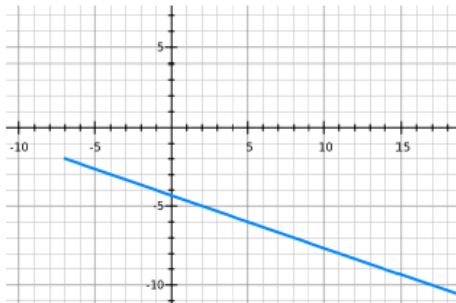


3. Sketch the graph determined by the parametric equations. In what direction is the graph traced out as the value of t increases?

$$x = 3t - 7$$

$$y = -t - 2$$

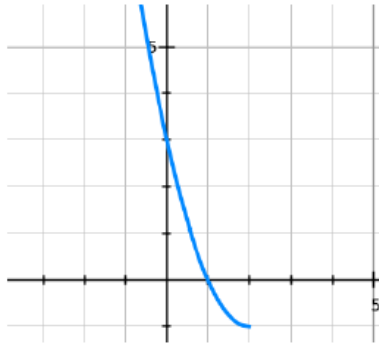
Ans: Linearly down to the right



4. Sketch the graph determined by the parametric equations. In what direction is the graph traced out as the value of t increases?

$$x = 2 - \sqrt{t-1}$$
$$y = t - 2$$

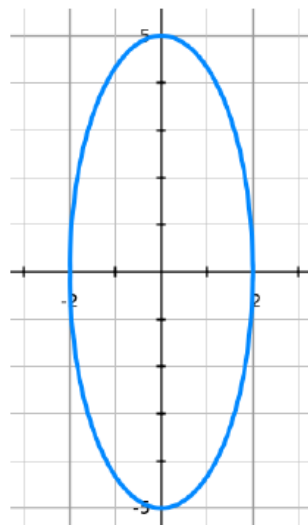
Ans: Curves up left



5. Sketch the graph determined by the parametric equations. In what direction is the graph traced out as the value of α increases?

$$x = 2 \sin \alpha$$
$$y = 5 \cos \alpha$$

Ans: beginning at (2, 0), to the right around the curve



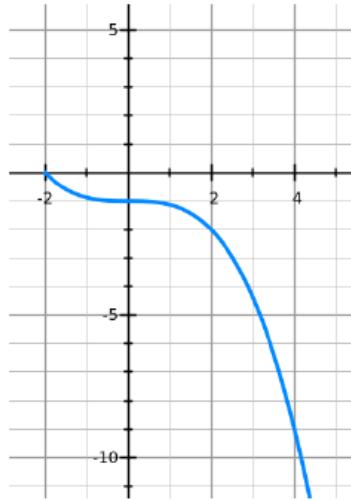
6. Sketch the graph determined by the parametric equations. In what direction is the graph traced out as the value of t increases?

$$x = -2t$$

$$y = t^3 - 1$$

$$-3 \leq t < 1$$

Ans: up to the left



7. Eliminate the parameter in the following set of parametric equations and write as a Cartesian equation.

$$x = 3 - 2t$$

$$y = 1 + 2t$$

Ans: $y = -x + 4$

8. Eliminate the parameter in the following set of parametric equations and write as a Cartesian equation.

$$x = t + 4$$

$$y = 2t - 1$$

Ans: $y = 2x - 9$

9. Eliminate the parameter in the following set of parametric equations and write as a Cartesian equation.

$$x = 3t - 7$$

$$y = -t - 2$$

Ans: $y = \frac{-x - 13}{3}$

10. Eliminate the parameter and find a Cartesian equation for the parametric equations below. What is the domain restriction on x ?

$$x = 2 - \sqrt{t-1}$$

$$y = t - 2$$

Ans: $y = x^2 - 4x + 3, x \leq 2$

11. Eliminate the parameter and find a Cartesian equation for the parametric equations below.

$$x = 2 \sin \alpha$$

$$y = 5 \cos \alpha$$

Ans: $y = \frac{10}{\sqrt{x^2 + 4}}$

12. Eliminate the parameter and find a Cartesian equation for the parametric equations below. What is the domain restriction on x ?

$$x = -2t$$

$$y = t^3 - 1$$

$$-3 \leq t < 1$$

Ans: $y = \frac{-x^3 - 8}{8}, -2 < x \leq 6$

13. The position of an object at time t seconds, $t \geq 0$, is given by the parametric equations

$$x = 2t^2 + 1$$

$$y = 3 - t$$

$$t \geq 0$$

What is the position of the object at $t = 4$ seconds?

Does the object pass through the point $(9, 1)$? If so, when?

Ans: $(33, -1)$; Yes, $t = 2$ sec

14. The position of an object at time t seconds, $t \geq 0$, is given by the parametric equations

$$x = \sqrt[3]{3 - 2t}$$

$$y = t + 4$$

$$t \geq 0$$

What is the position of the object at $t = 5.5$ seconds?

Does the object pass through the point $(1, 5)$? If so, when?

When is the object to the left of the y -axis?

Ans: $(-2, 9.5)$; yes, $t = 1$ sec; $t > 3/2$

15. The position of an object at time t seconds, $t \geq 0$, is given by the parametric equations

$$x = 2 \cos t - 1$$

$$y = -3 \sin t + \frac{1}{2}$$

$$t \geq 0$$

What is the x -coordinate of the object's position when its y -coordinate is -2 ?

Ans: $x = \sqrt{11}$

16. The position of an object at time t seconds, $t \geq 0$, is given by the parametric equations

$$x = 2t^3 + 3$$

$$y = t^3 - 5$$

$$t \geq 0$$

What is the x -coordinate of the object's position when its y -coordinate is 3 ?

Ans: 19