



# Precalculus Workbook

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Parametric curves

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MATH

## PARAMETRIC CURVES AND ELIMINATING THE PARAMETER

- 1. Sketch the curve defined by the parametric equations.

$$x = \arcsin t$$

$$y = \arccos t$$

- 2. Sketch the curve defined by the parametric equations.

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

$$y = 3 + \sin t$$

- 3. Eliminate the parameter.

$$x = t^2 + 3t - 4$$

$$y = \sqrt[3]{t}$$

- 4. Eliminate the parameter.

$$x = t + \frac{1}{t}$$

$$y = t^2 + \frac{1}{t^2}$$



**■ 5. Eliminate the parameter.**

$$x = 2 + 3 \cos t$$

$$y = 4 - \cos t$$

**■ 6. Eliminate the parameter.**

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

$$y = 5 + 3 \sin t$$



## DIRECTION OF THE PARAMETER

- 1. Sketch the graph of the parametric curve and indicate the direction of increasing  $t$  for  $t > 0$ .

$$x = t^2$$

$$y = t - 2$$

- 2. Sketch the graph of the parametric curve and indicate the direction of increasing  $t$ .

$$x = 1 + \cos t$$

$$y = 2 + \sin t$$

- 3. Sketch the graph of the parametric curve and indicate the direction of increasing  $t$ .

$$x = t^2$$

$$y = t^3$$

- 4. Sketch the graph of the parametric curve and indicate the direction of increasing  $t$  on the interval  $\pi/6 < t < \pi/3$ .



$$x = \tan t$$

$$y = \cot t$$

- 5. Sketch the graph of the parametric curve and indicate the direction of increasing  $t$ .

$$x = \sin t + \cos t$$

$$y = \sin t - \cos t$$

- 6. Sketch the graph of the parametric curve and indicate the direction of increasing  $t$ .

$$x = t^2 + t$$

$$y = 1 - t$$



## FINDING THE PARAMETRIC REPRESENTATION

- 1. Express the rectangular equation in parametric form.

$$(x - 3)^2 - (y - 4)^2 = 4$$

- 2. Express the rectangular equation in parametric form.

$$x^2 + 2xy + x + 4y - 5 = 0$$

- 3. Express the rectangular equation in parametric form.

$$x^2 + 4y^2 - 6x + 8y = 0$$

- 4. Express the rectangular equation in parametric form.

$$x^2 + 4xy + 4y^2 = 0$$

- 5. Express the rectangular equation in parametric form.

$$x^2y^2 - y^2 + 1 = 0$$

- 6. Express the rectangular equation in parametric form.



$$xy + \sin y - 1 = 0$$



