

Definition. A “parametrized plane curve”

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Explicitly,
 $\gamma(t) = (f_1(t), f_2(t))$, for planes

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Examples.

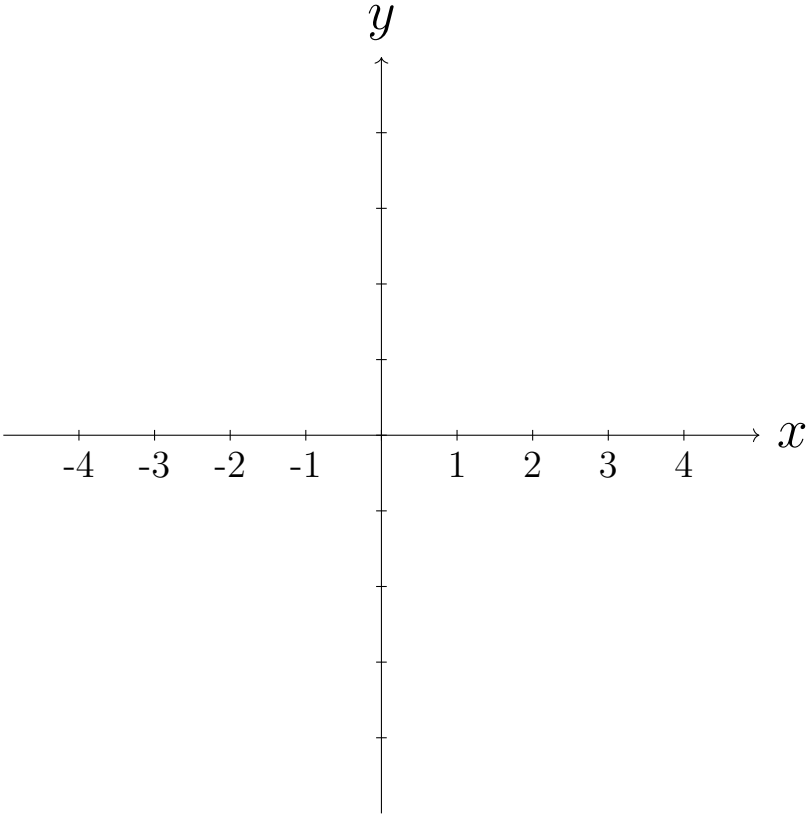
$$\begin{aligned} 1. \quad L &:= \{(x, y) \in \mathbb{R}^2 \mid 4y = 7x + 3\} \\ \gamma &: (-\infty, \infty) \rightarrow \mathbb{R}^2 \\ \gamma(t) &= (t, \frac{7t+3}{4}) \in L \end{aligned}$$

$$\begin{aligned} 2. \quad P &:= \{(x, y) \in \mathbb{R}^2 \mid y^2 = x\} \\ \gamma &: (-\infty, \infty) \rightarrow \mathbb{R}^2 \\ \gamma(t) &= (t^2, t) \in P \end{aligned}$$

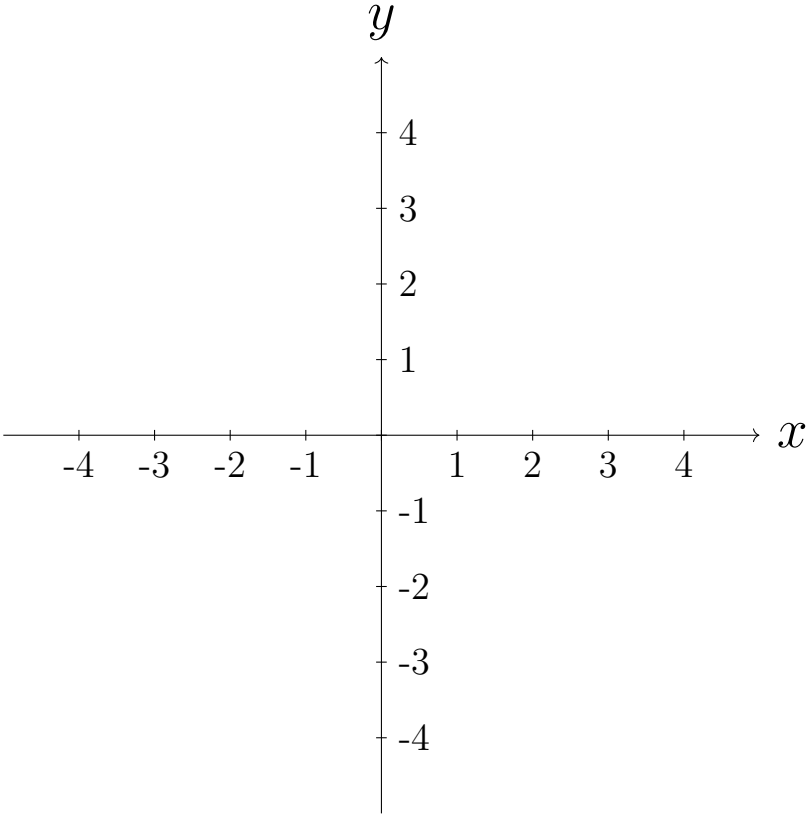
Parametrizing a circle



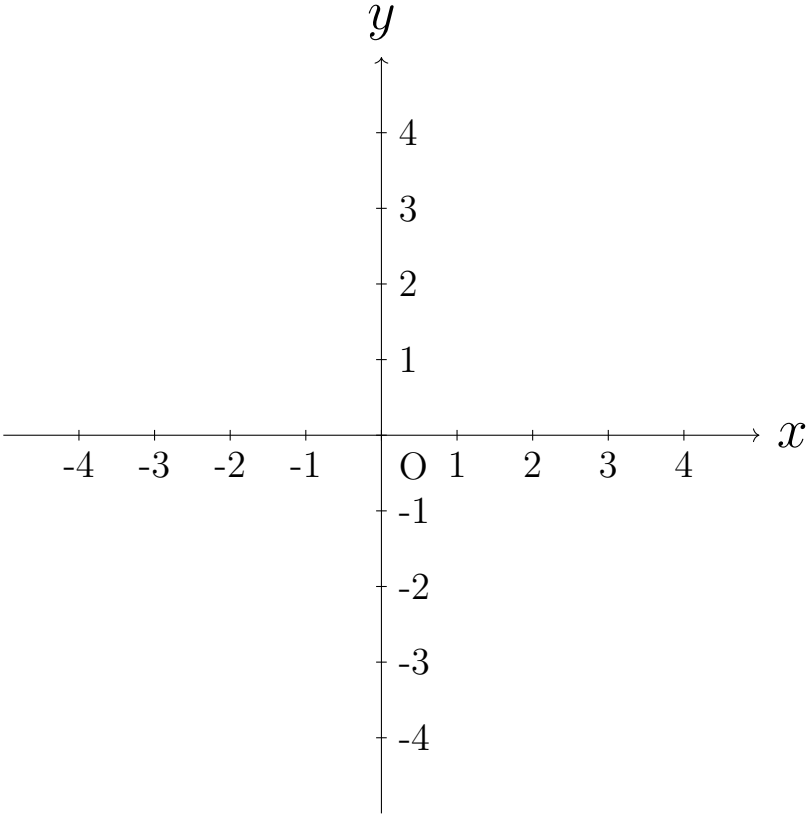
Parametrizing a circle



Parametrizing a circle

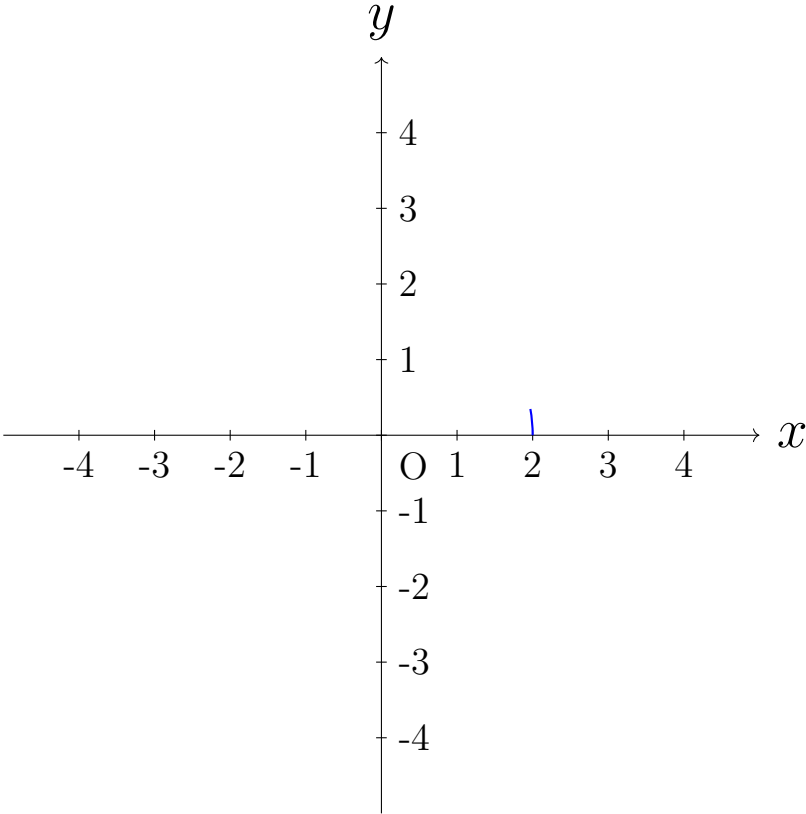


Parametrizing a circle

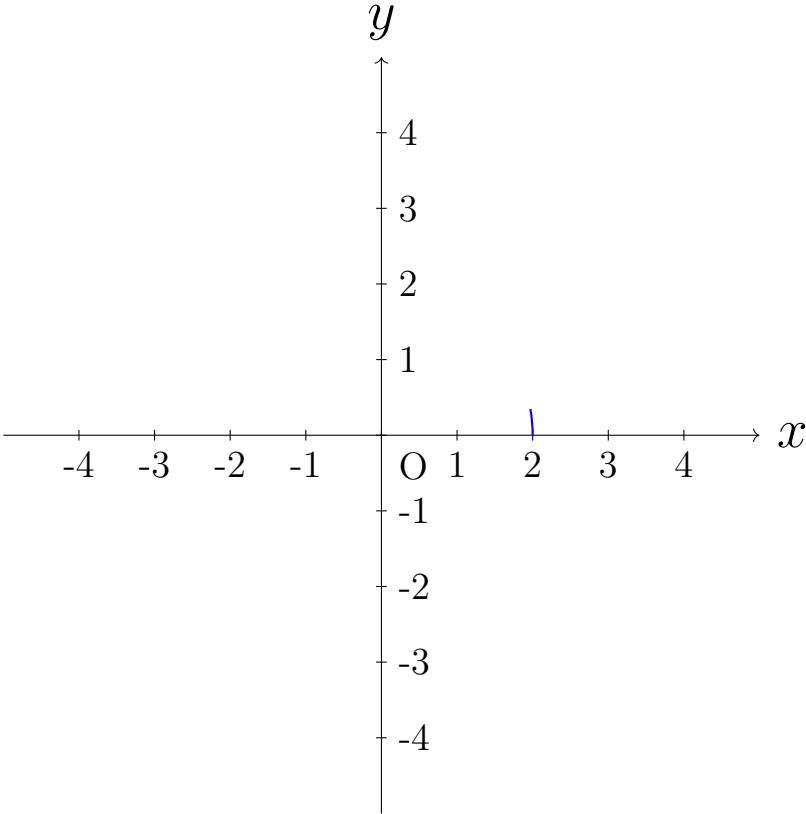


Parametrizing a circle

$$\gamma : (0, \pi/18) \rightarrow \mathbb{R}^2$$



Parametrizing a circle

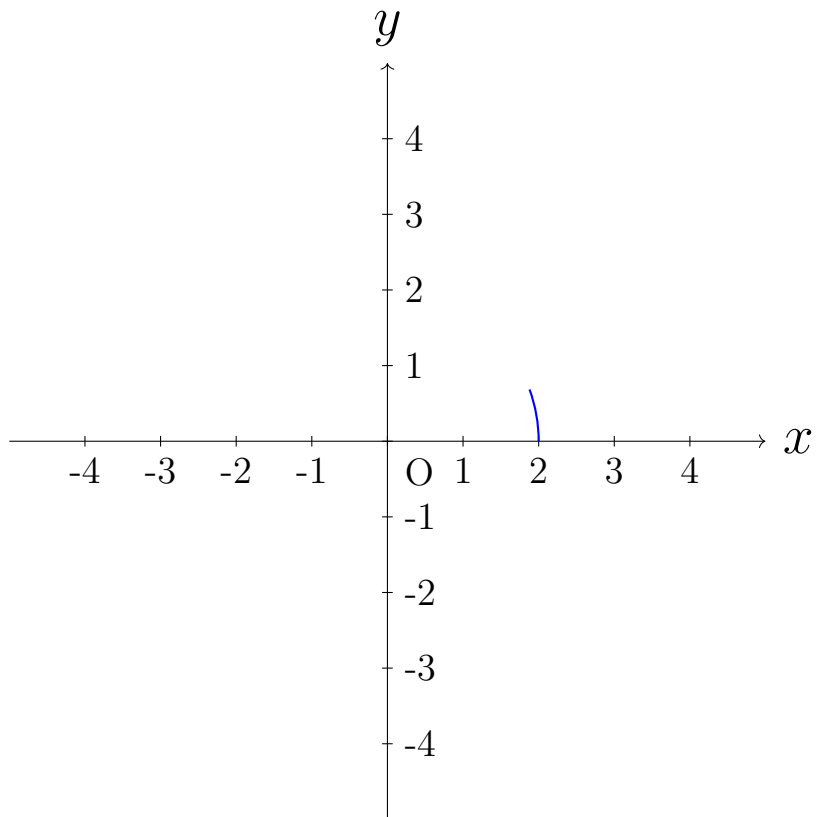


$$\gamma : (0, \pi/18) \rightarrow \mathbb{R}^2$$
$$\gamma(t) := (2 \cos(t), 2 \sin(t))$$

Parametrizing a circle

$$\gamma : (0, 2\pi/18) \rightarrow \mathbb{R}^2$$

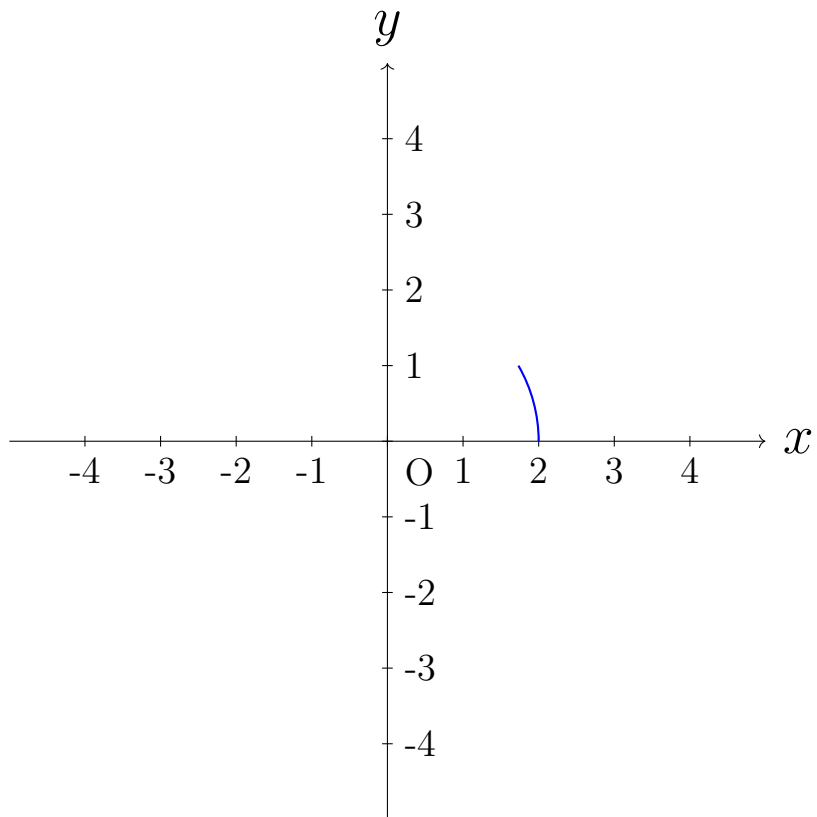
$$\gamma(t) := (2 \cos(t), 2 \sin(t))$$



Parametrizing a circle

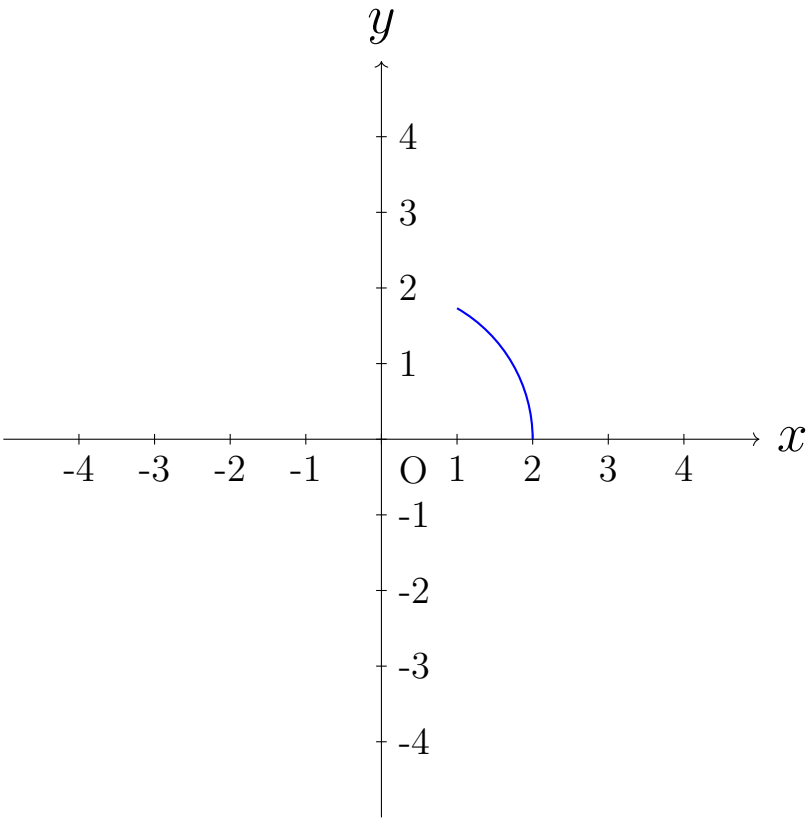
$$\gamma : (0, 3\pi/18) \rightarrow \mathbb{R}^2$$

$$\gamma(t) := (2 \cos(t), 2 \sin(t))$$



Parametrizing a circle

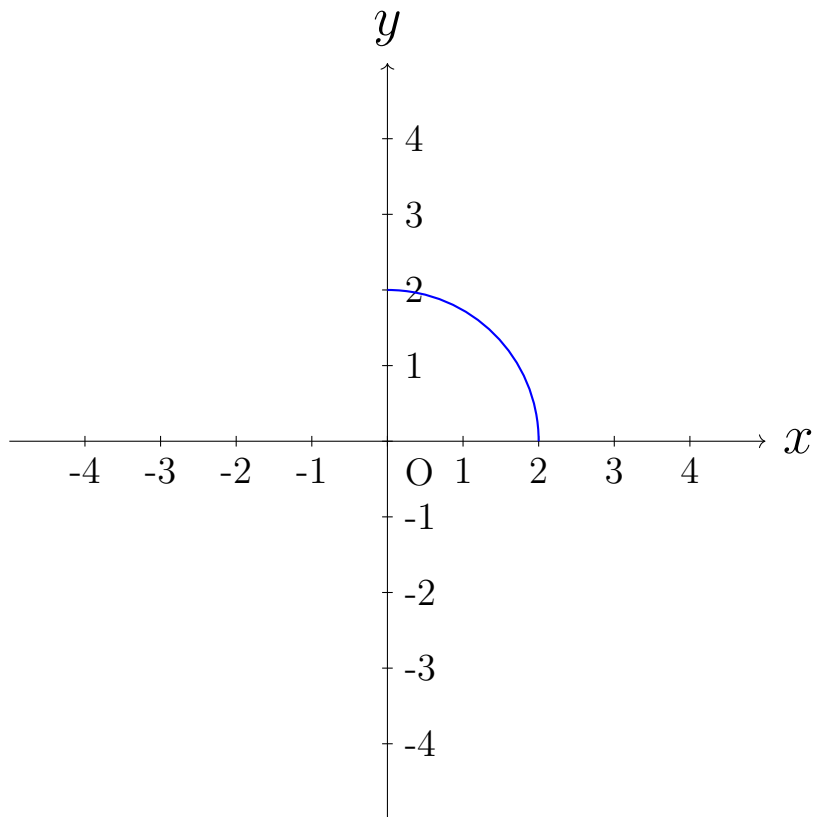
$$\gamma : (0, 6\pi/18) \rightarrow \mathbb{R}^2$$
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Parametrizing a circle

$$\gamma : (0, 9\pi/18) \rightarrow \mathbb{R}^2$$

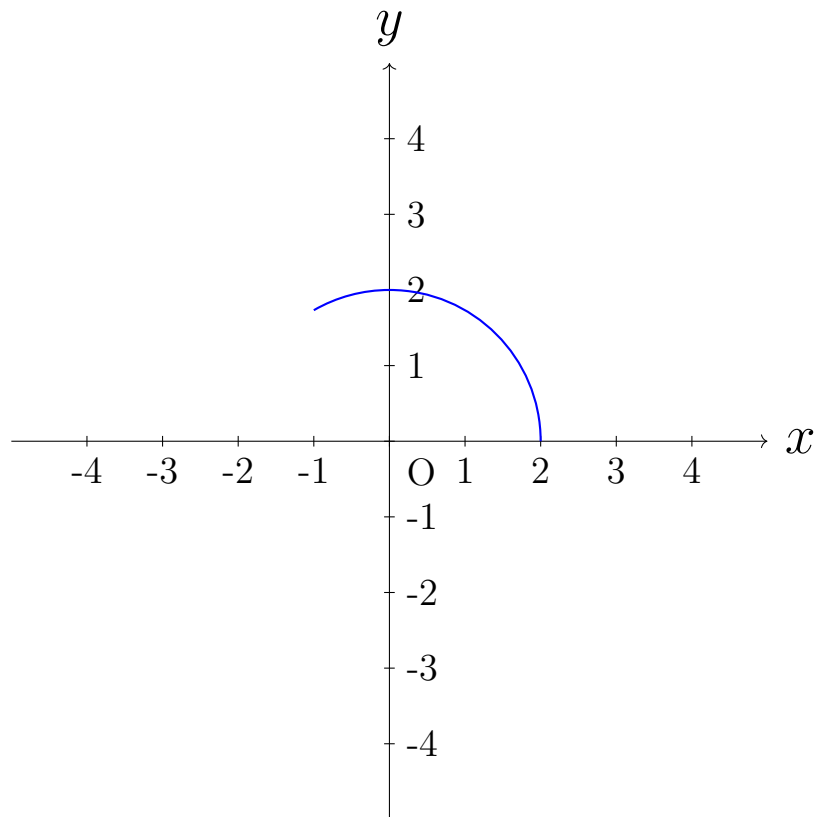
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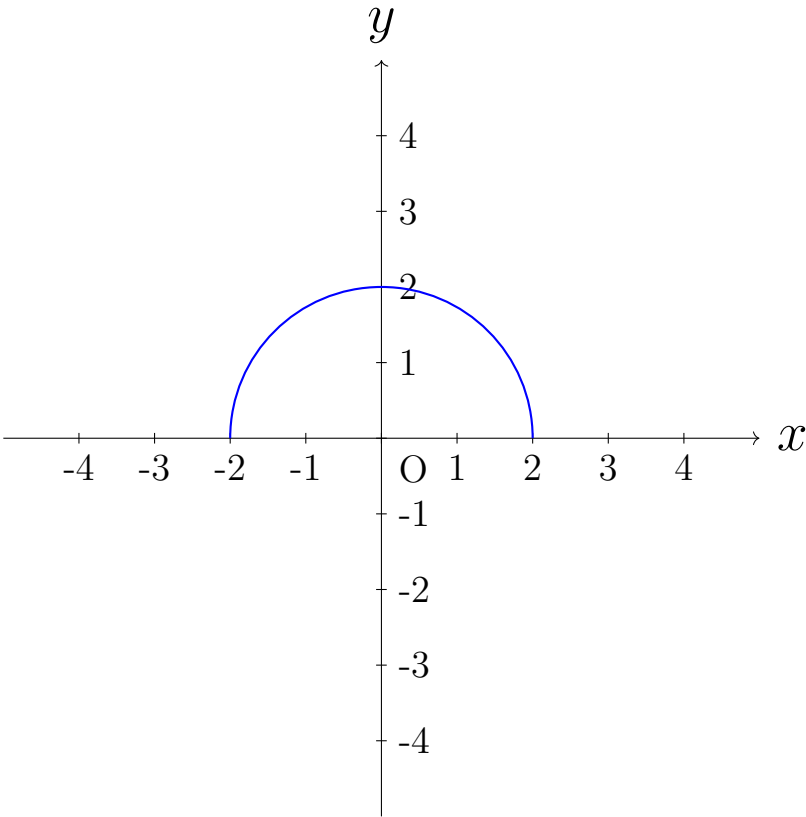
$$\gamma : (0, 12\pi/18) \rightarrow \mathbb{R}^2$$

$$\gamma(t) := (2 \cos(t), 2 \sin(t))$$



Parametrizing a circle

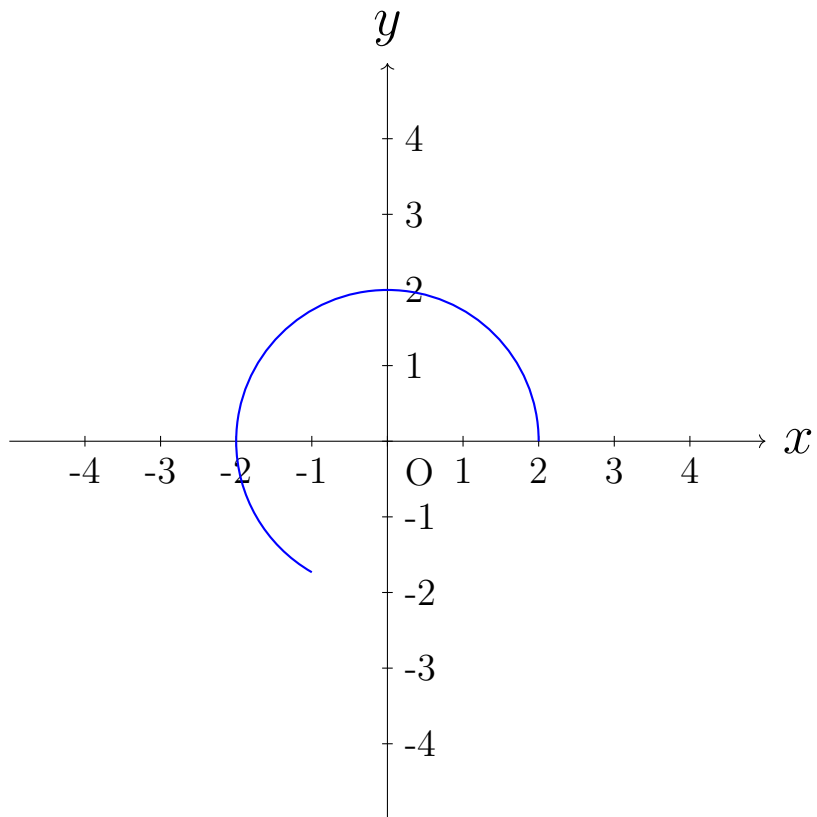
$$\gamma : (0, 18\pi/18) \rightarrow \mathbb{R}^2$$
$$\gamma(t) := (2 \cos(t), 2 \sin(t))$$



Parametrizing a circle

$$\gamma : (0, 24\pi/18) \rightarrow \mathbb{R}^2$$

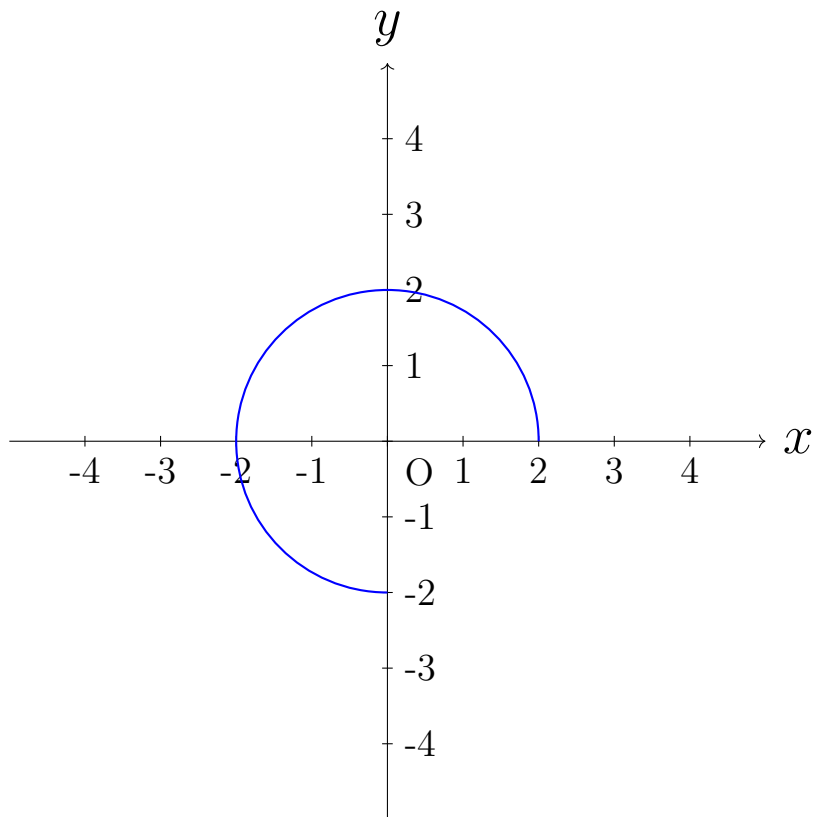
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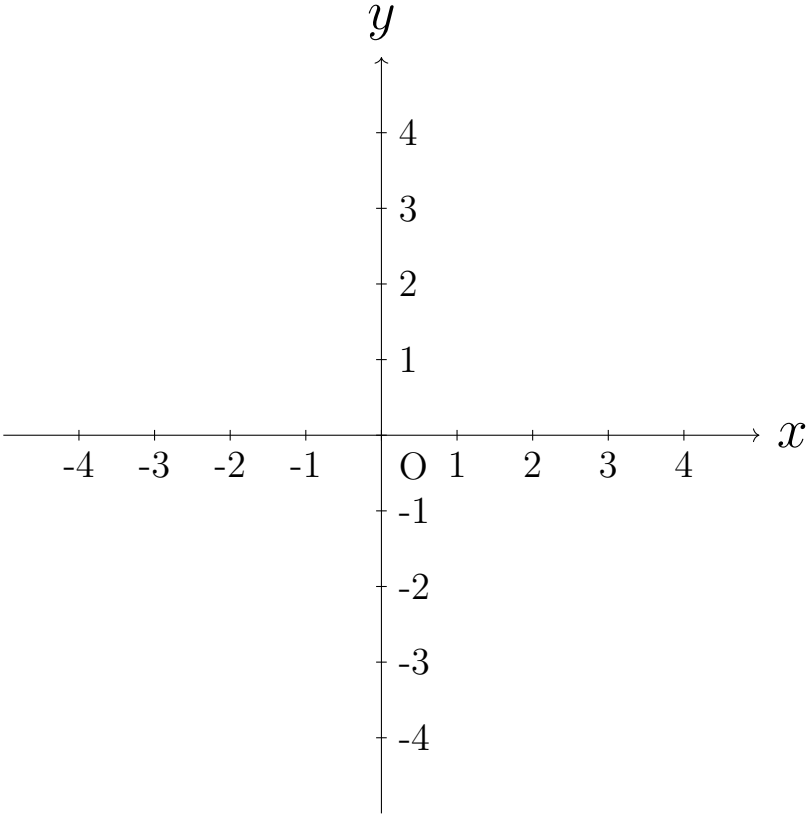
Parametrizing a circle

$$\gamma : (0, 27\pi/18) \rightarrow \mathbb{R}^2$$

$$\gamma(t) := (2 \cos(t), 2 \sin(t))$$



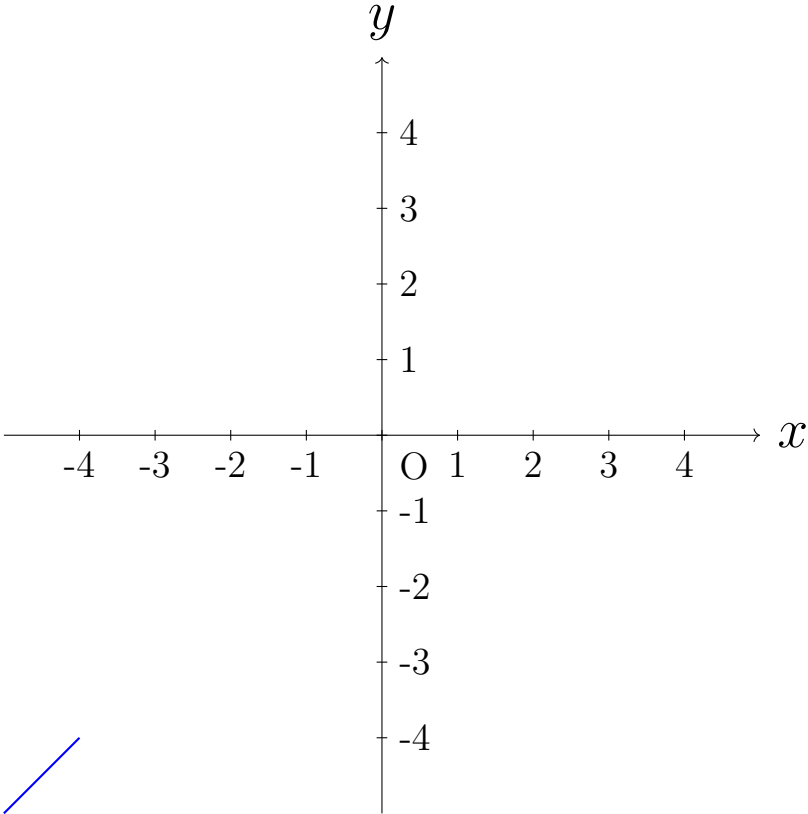
Parametrizing a line



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Parametrizing a line

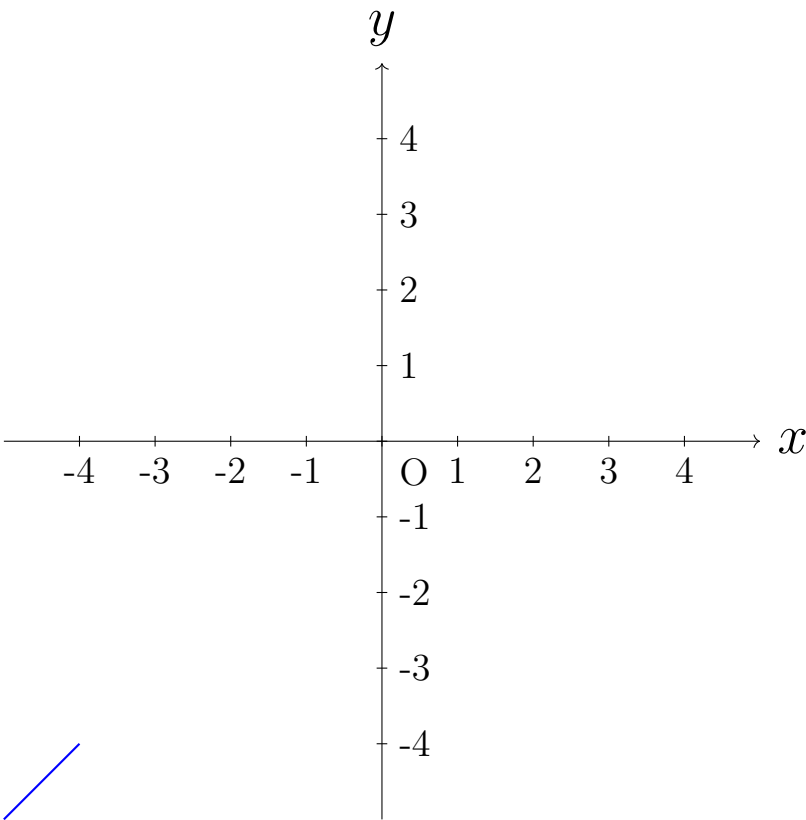
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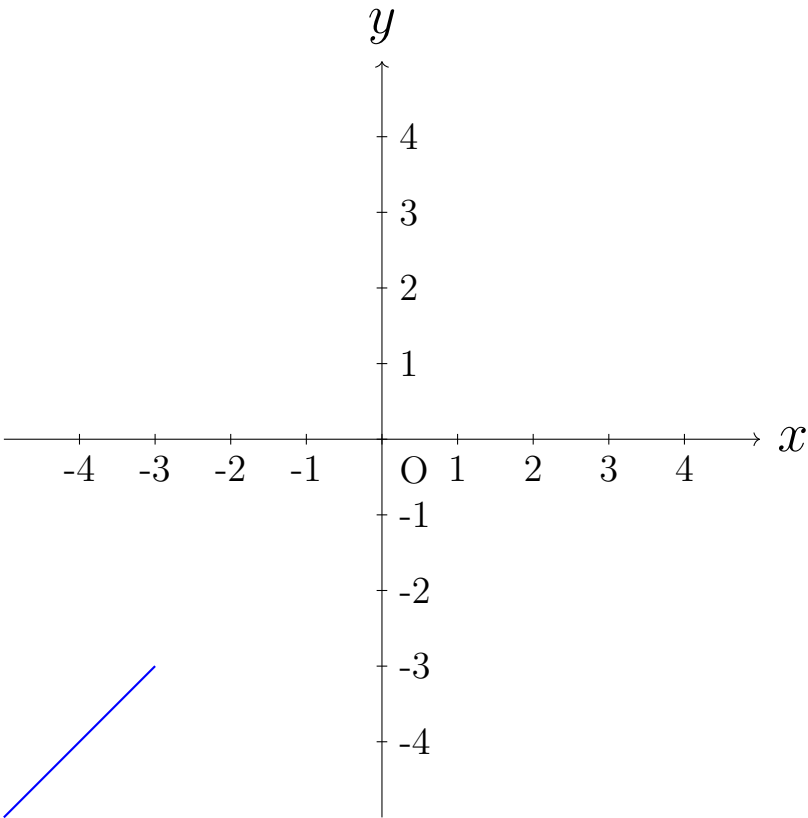
$$\gamma(t) := (t, t)$$



Parametrizing a line

$$\gamma : (-5, -3) \rightarrow \mathbb{R}^2$$

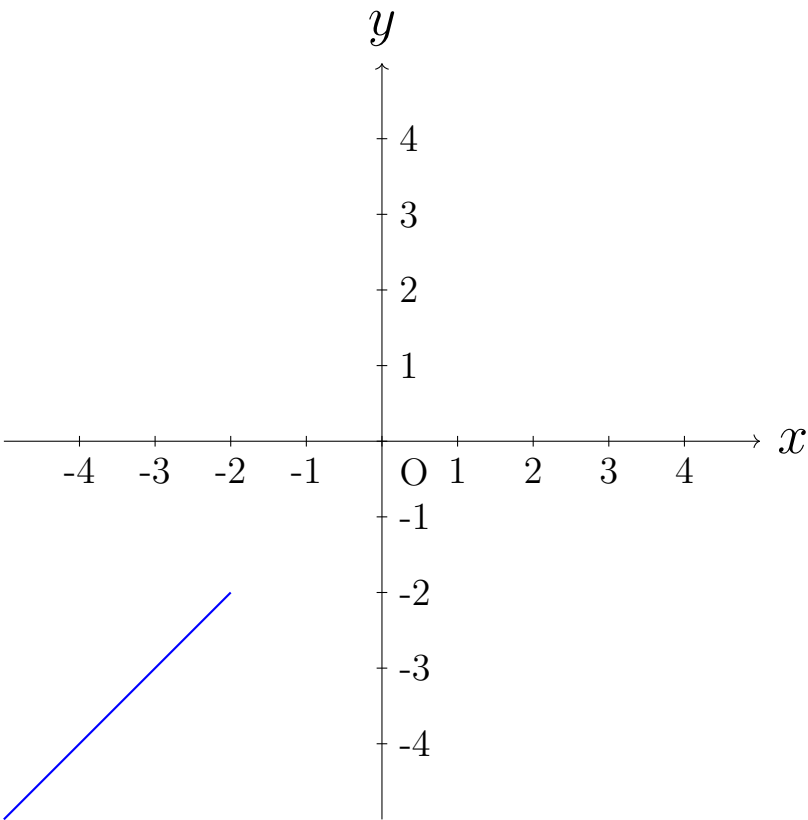
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Parametrizing a line

$$\gamma : (-5, -2) \rightarrow \mathbb{R}^2$$

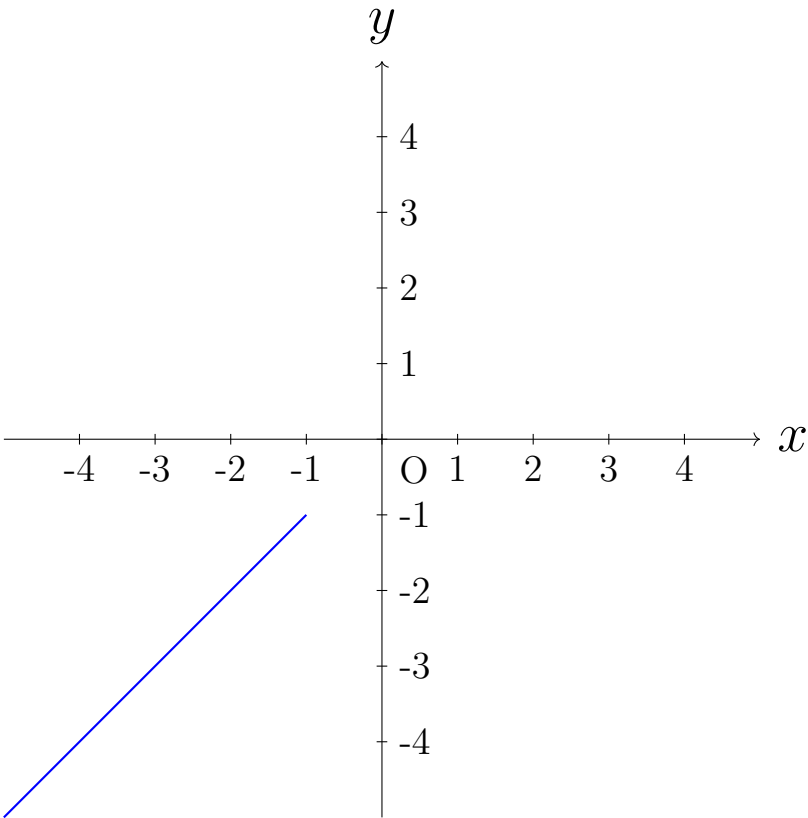
$$\gamma(t) := (t, t)$$



Parametrizing a line

$$\gamma : (-5, -1) \rightarrow \mathbb{R}^2$$

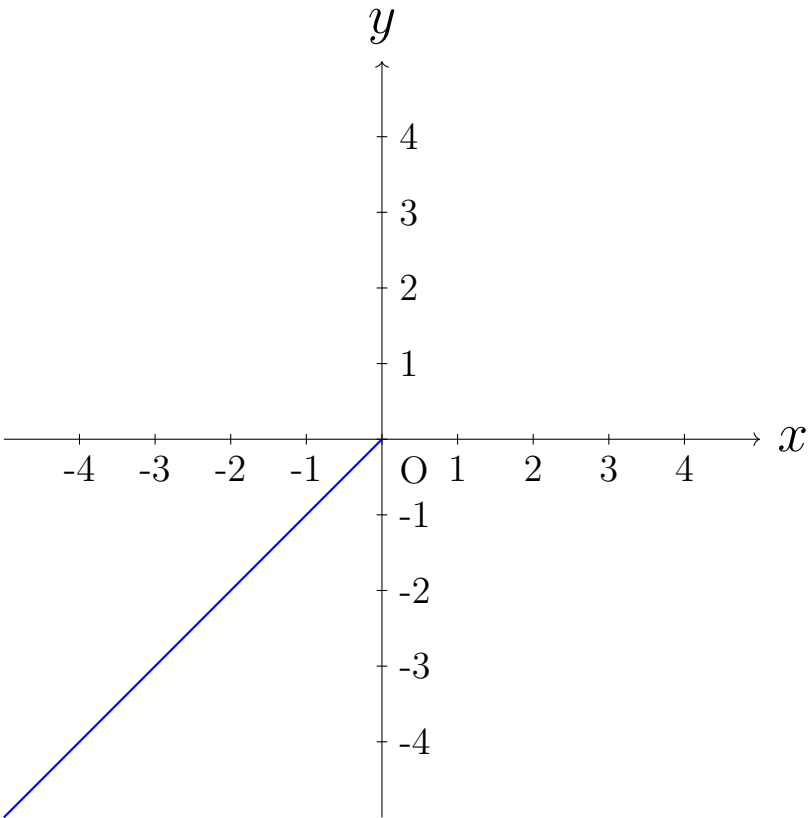
$$\gamma(t) := (t, t)$$



Parametrizing a line

$$\gamma : (-5, 0) \rightarrow \mathbb{R}^2$$

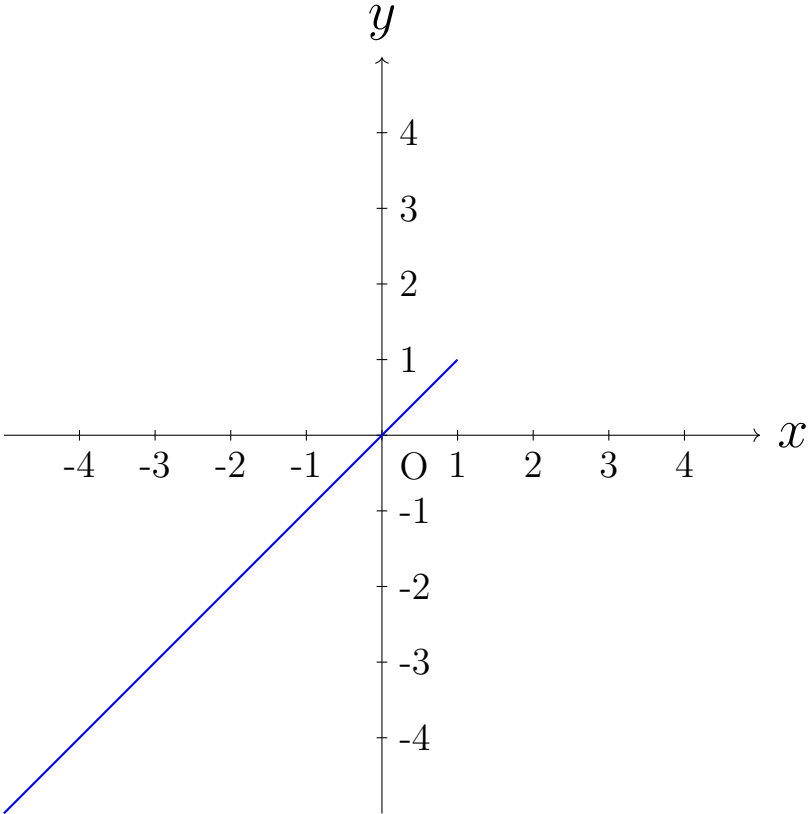
$$\gamma(t) := (t, t)$$



Parametrizing a line

$$\gamma : (-5, 1) \rightarrow \mathbb{R}^2$$

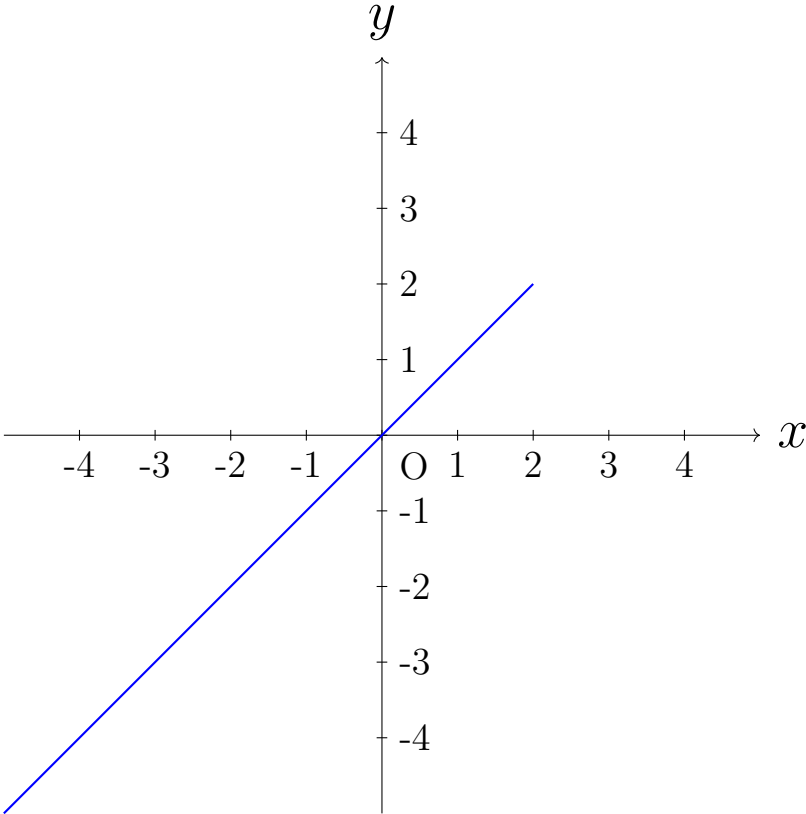
$$\gamma(t) := (t, t)$$



Parametrizing a line

$$\gamma : (-5, 2) \rightarrow \mathbb{R}^2$$

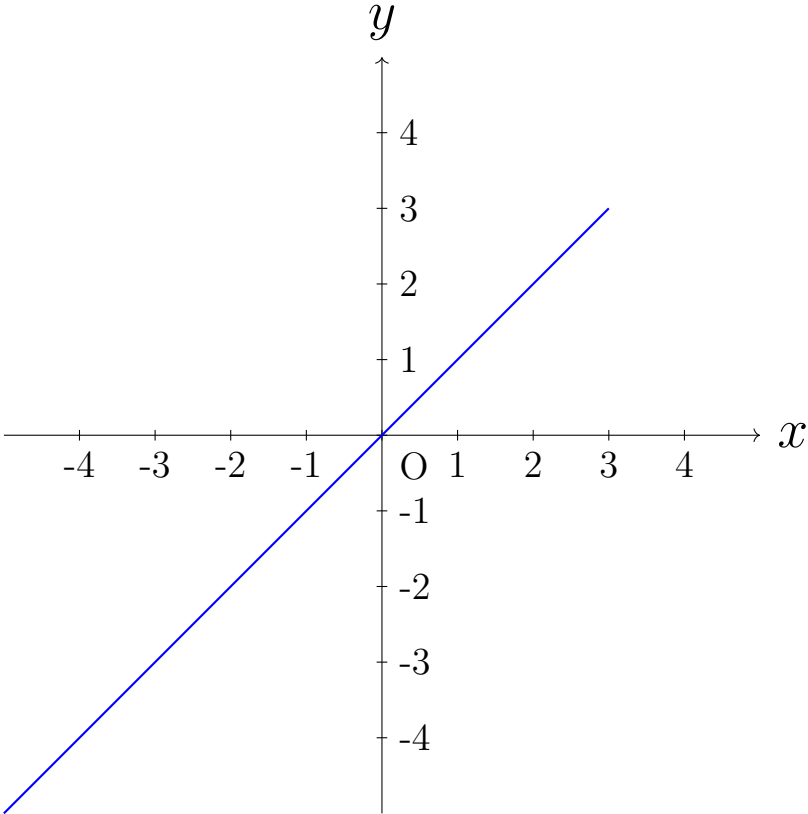
$$\gamma(t) := (t, t)$$



Parametrizing a line

$$\gamma : (-5, 3) \rightarrow \mathbb{R}^2$$

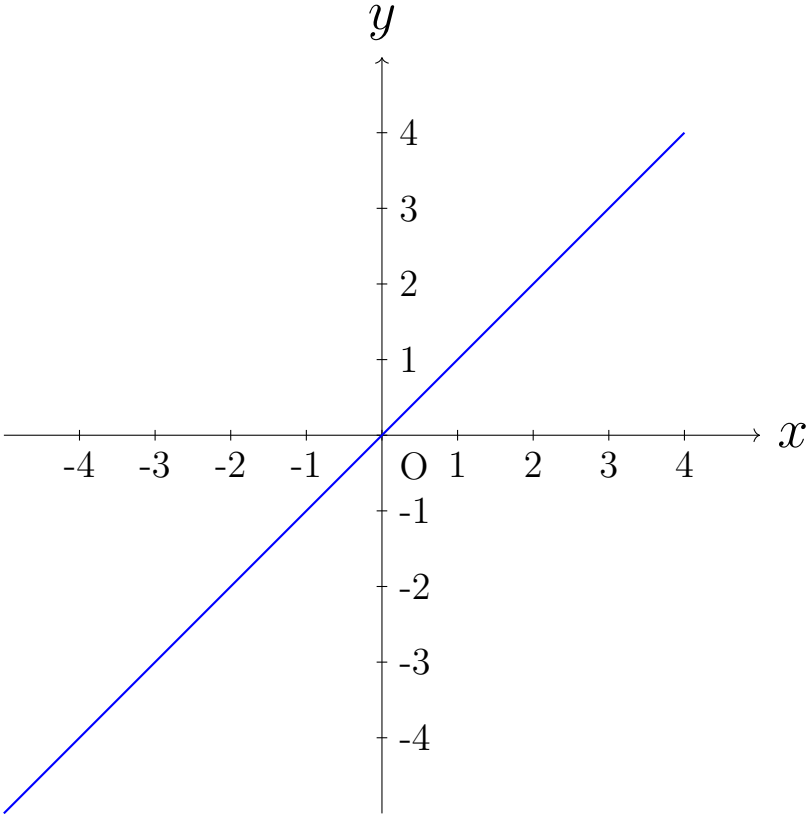
$$\gamma(t) := (t, t)$$



Parametrizing a line

$$\gamma : (-5, 4) \rightarrow \mathbb{R}^2$$

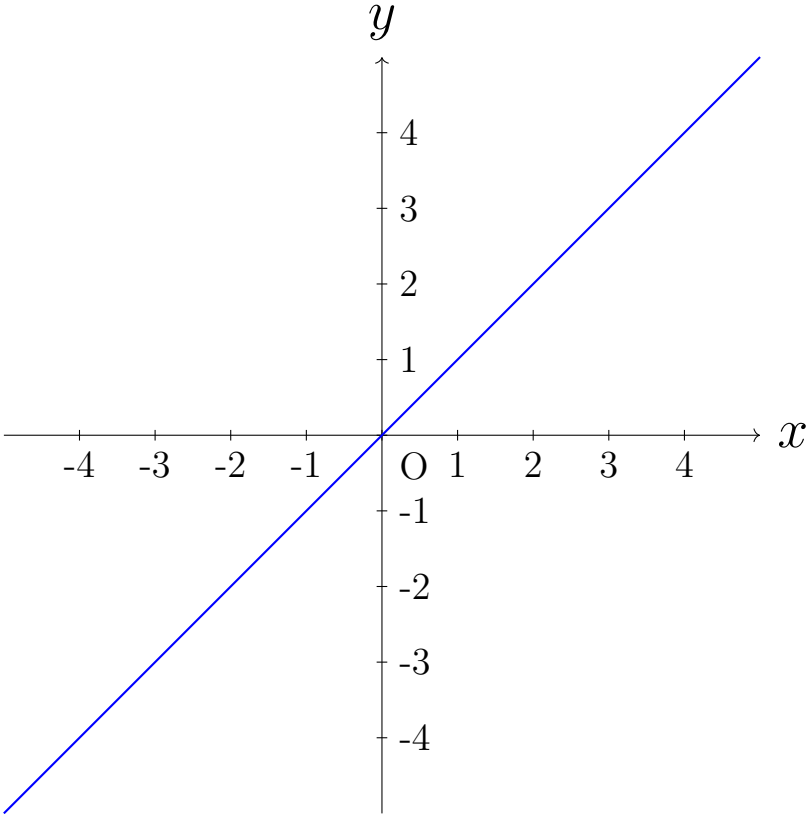
$$\gamma(t) := (t, t)$$



Parametrizing a line

$$\gamma : (-5, 5) \rightarrow \mathbb{R}^2$$

$$\gamma(t) := (t, t)$$



Quick review: Derivative

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Example. $f : \mathbb{R} \rightarrow \mathbb{R}$

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