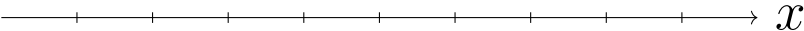


Notation: Sets

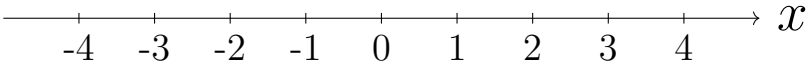
Notation: Sets

_____→ x

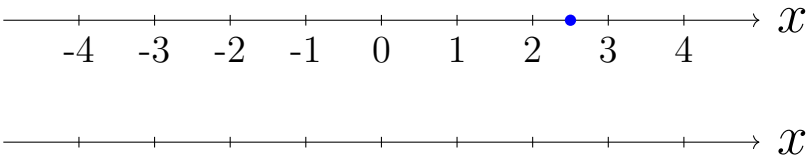
Notation: Sets



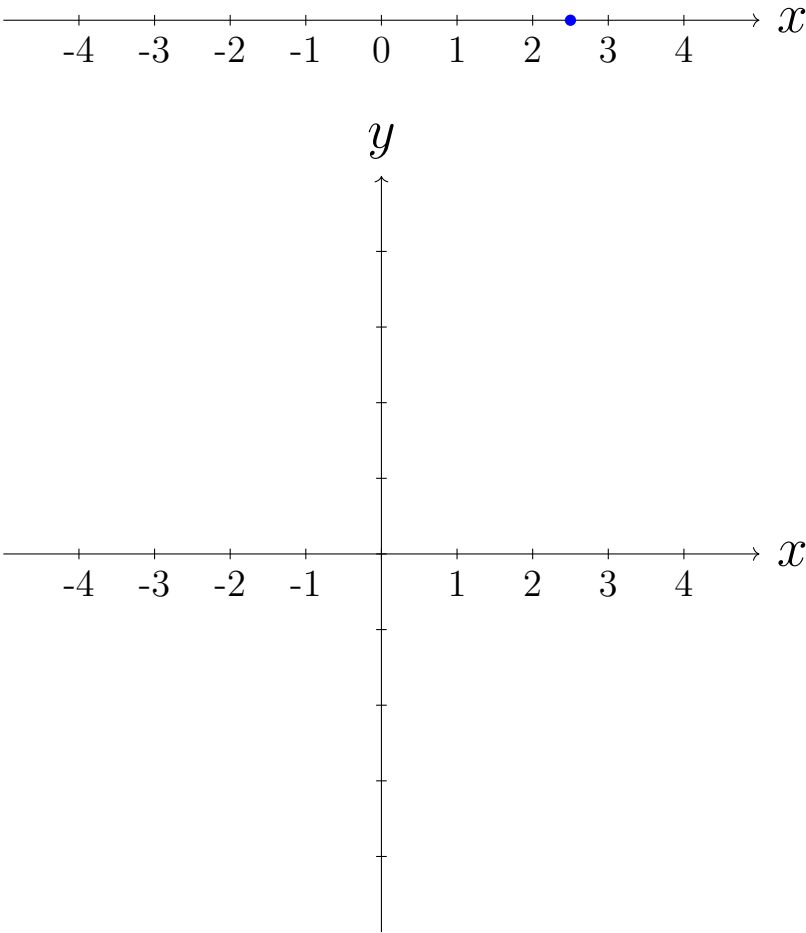
Notation: Sets



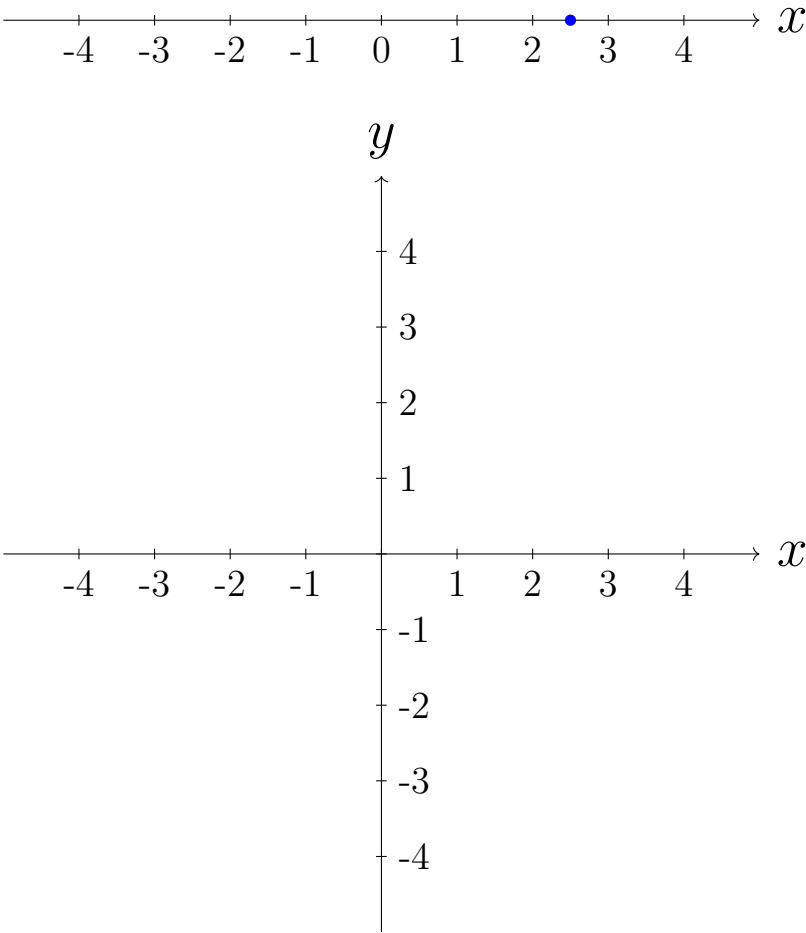
Notation: Sets



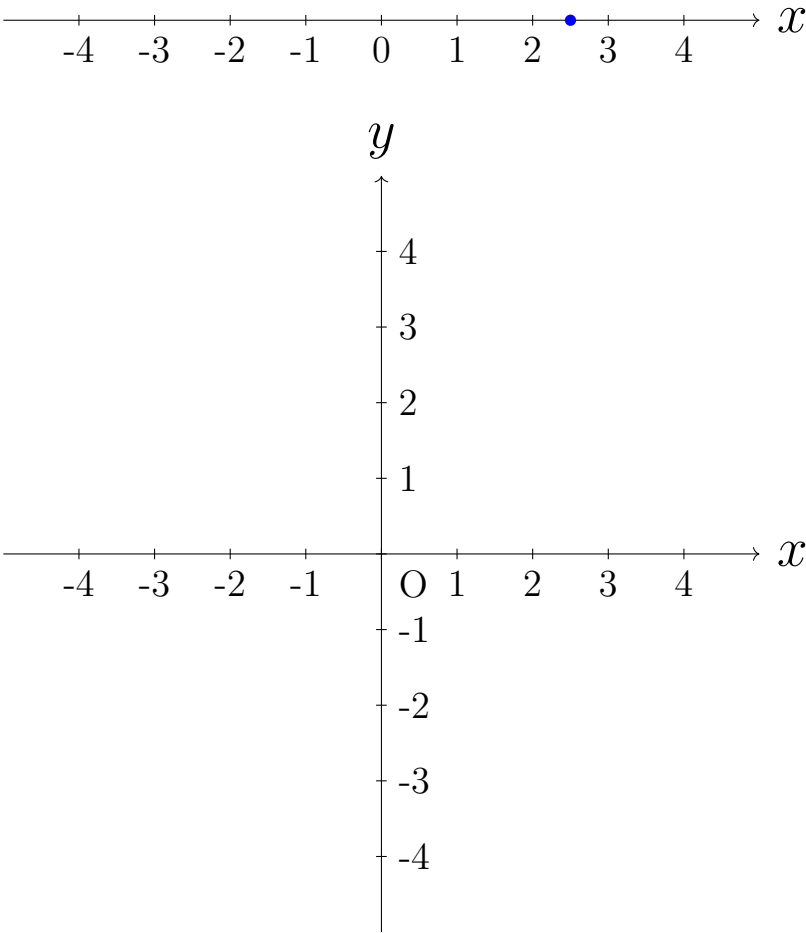
Notation: Sets



Notation: Sets

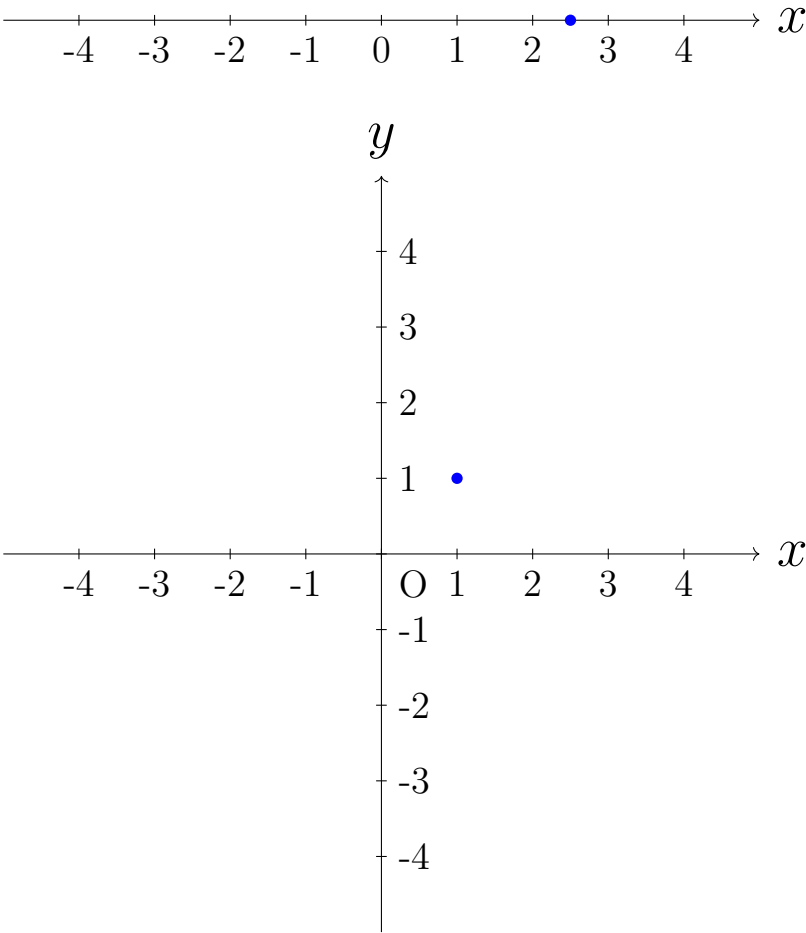


Notation: Sets



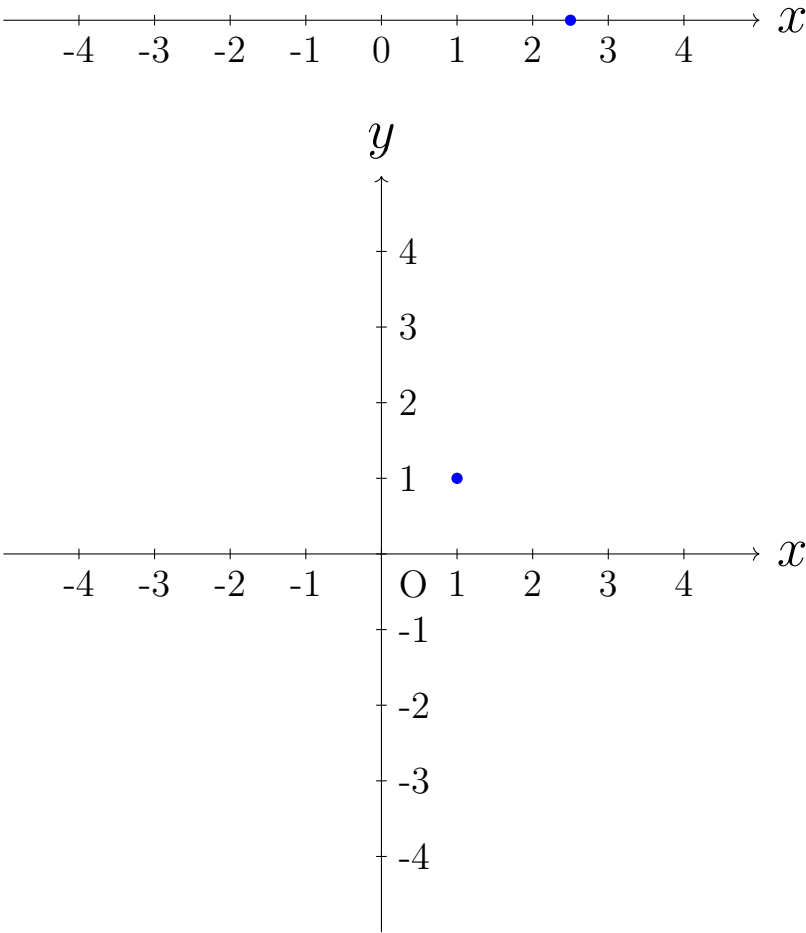
Notation: Sets

Point: $(1, 1)$



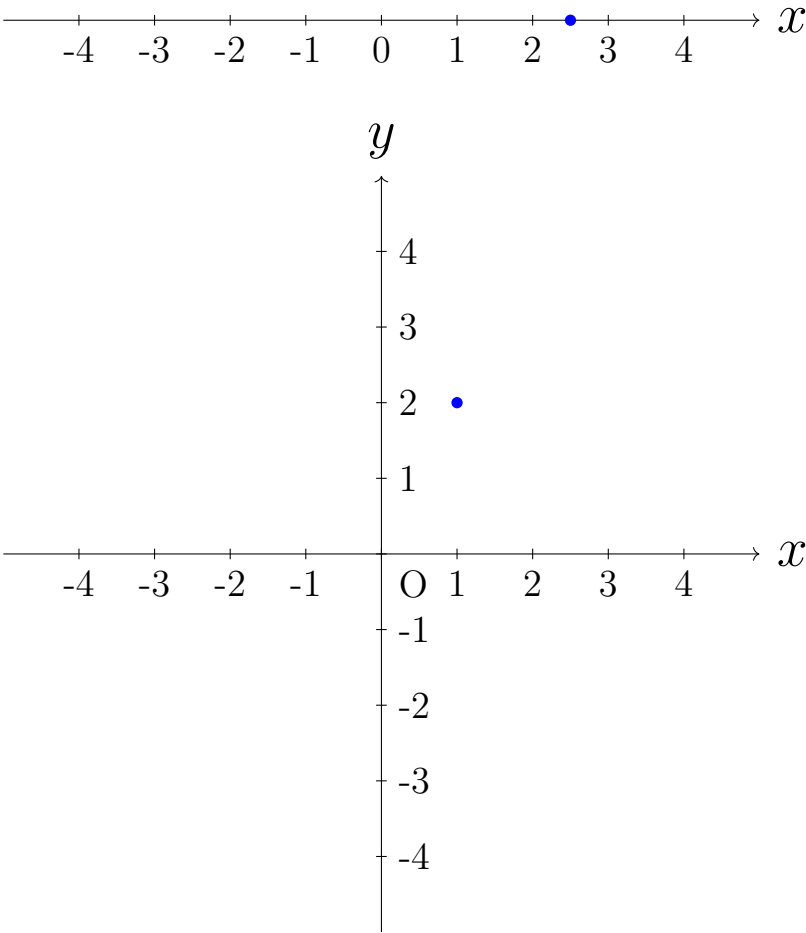
Notation: Sets

Point: $(1, 1) \in \mathbb{R}^2$



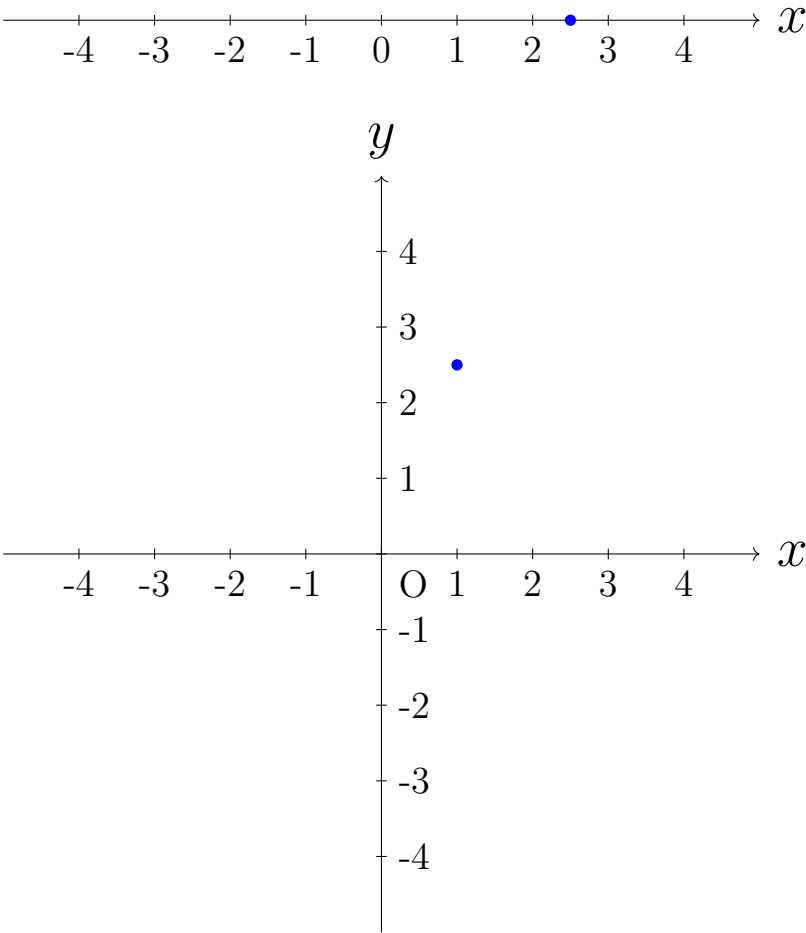
Notation: Sets

Point: $(1, 2) \in \mathbb{R}^2$



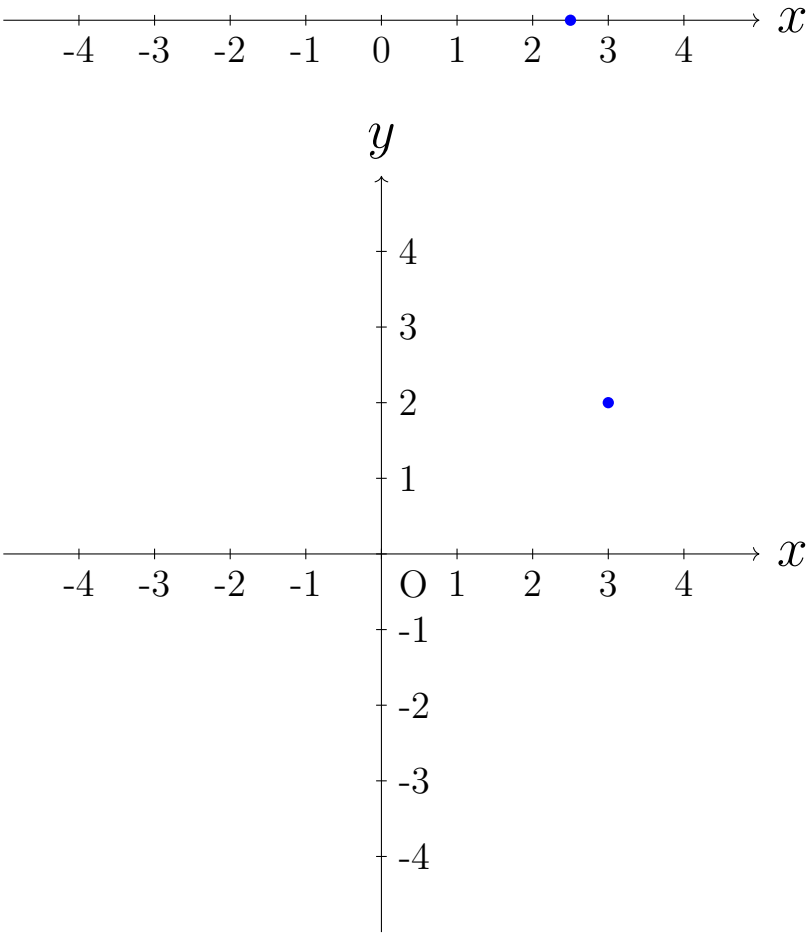
Notation: Sets

Point: $(1, 2.5) \in \mathbb{R}^2$

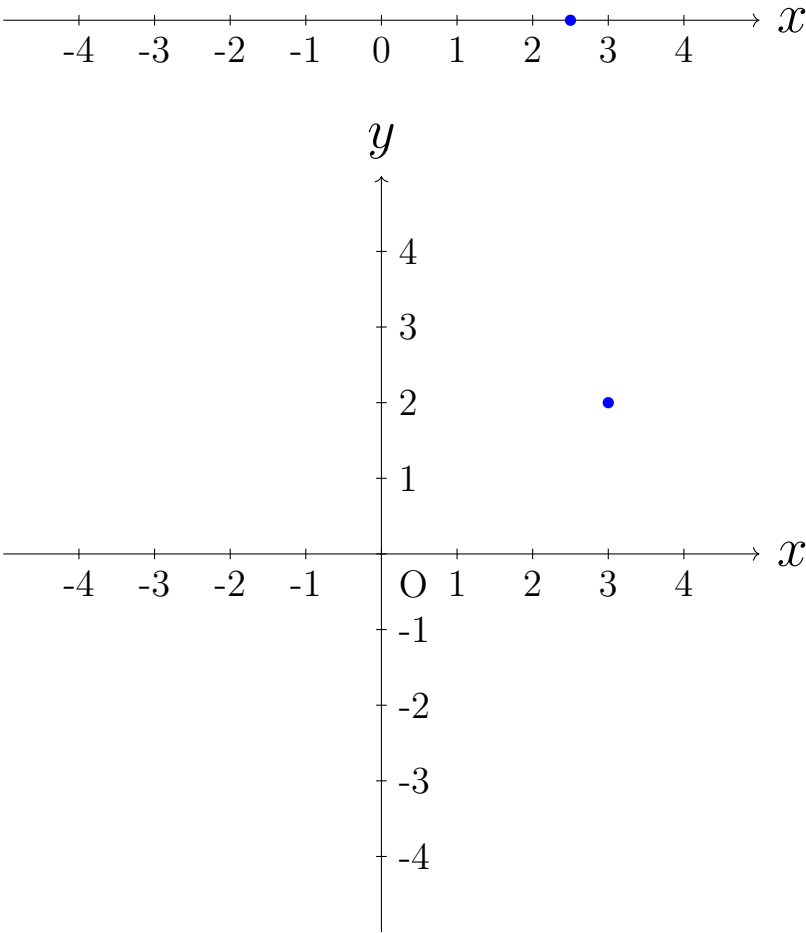


Notation: Sets

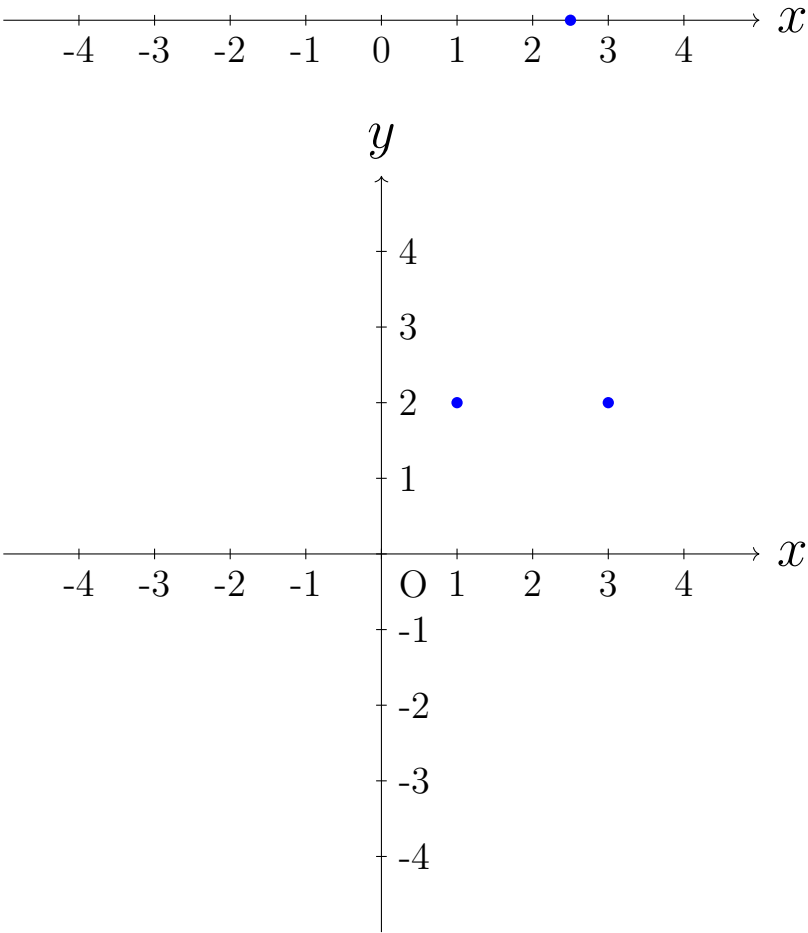
Point: $(3, 2) \in \mathbb{R}^2$



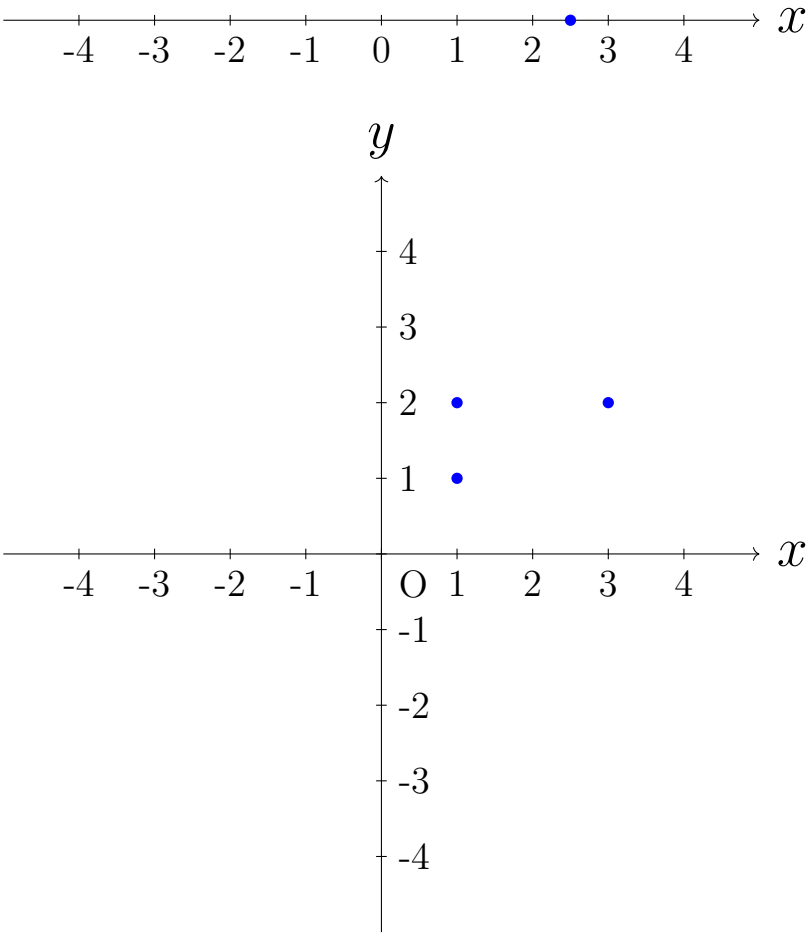
Notation: Sets



Notation: Sets

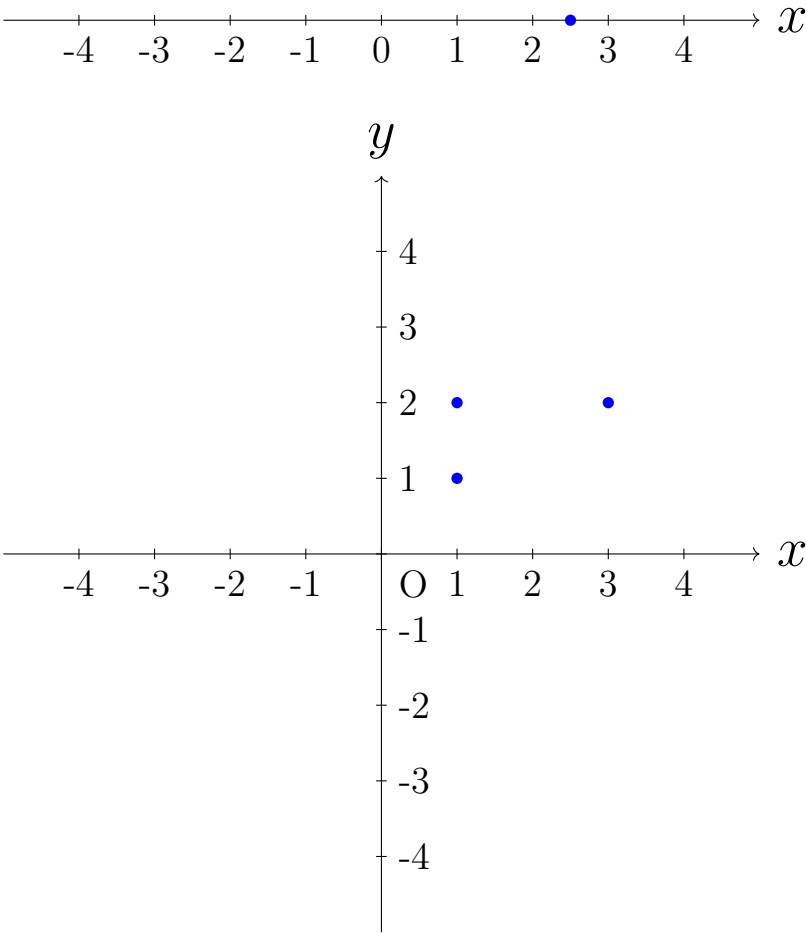


Notation: Sets



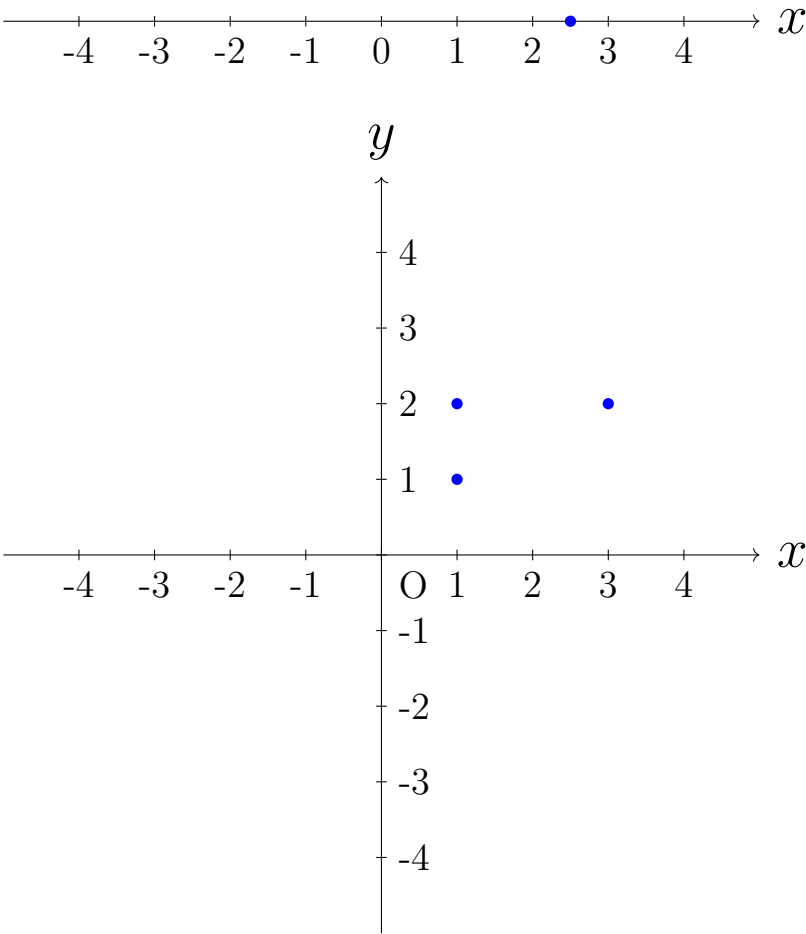
Notation: Sets

$$\{(1, 1), (1, 2), (1, 3)\}$$



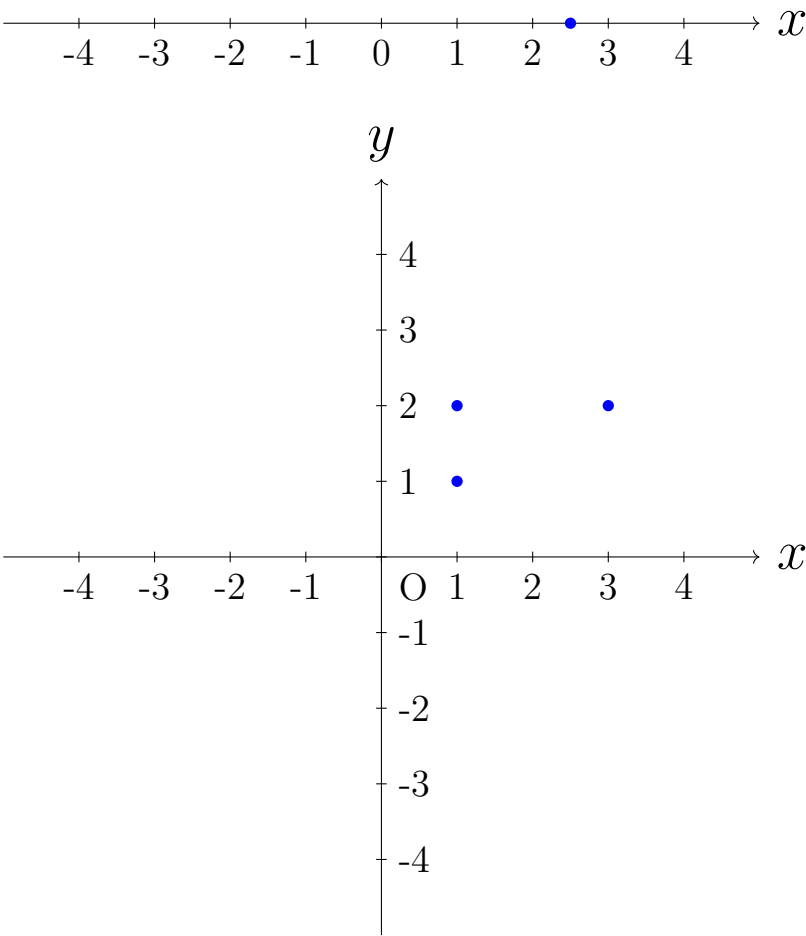
Notation: Sets

$$S := \{(1, 1), (1, 2), (1, 3)\}$$

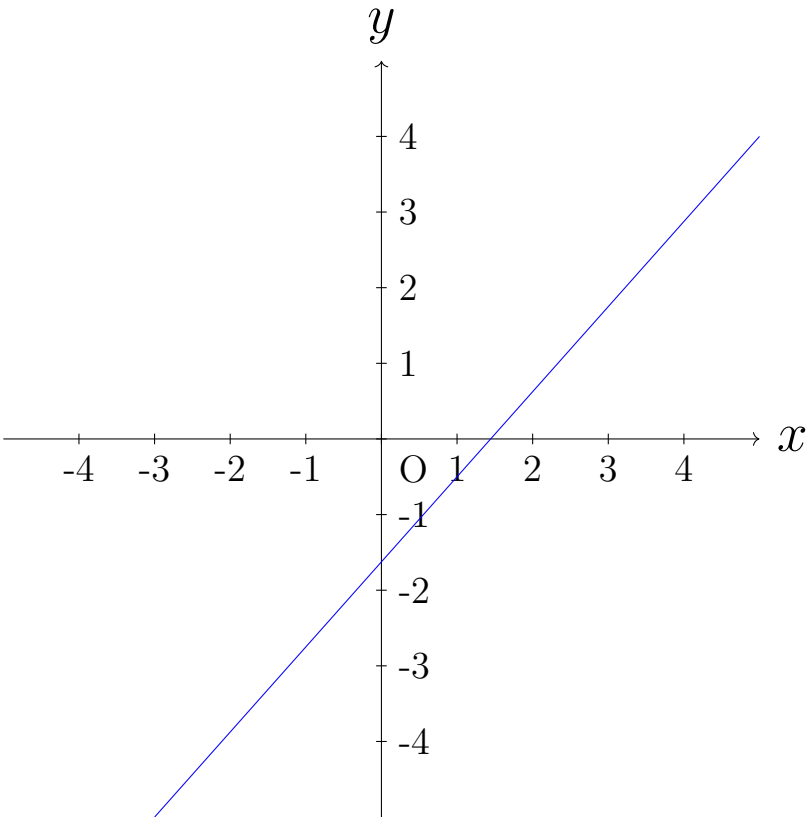
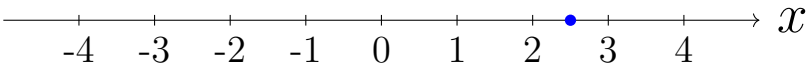


Notation: Sets

$$S := \{(1, 1), (1, 2), (1, 3)\} \subset \mathbb{R}^2$$



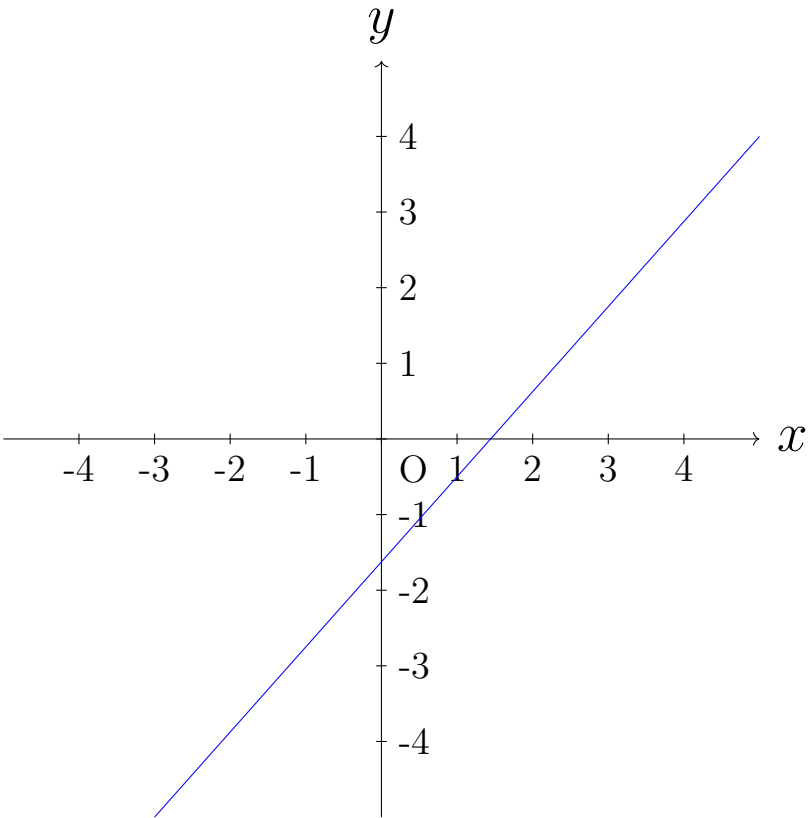
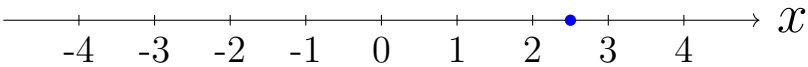
Notation: Sets



$$S := \{(1, 1), (1, 2), (1, 3)\} \subset \mathbb{R}^2$$

A line,

Notation: Sets



$$S := \{(1, 1), (1, 2), (1, 3)\} \subset \mathbb{R}^2$$

A line, defined by points (x, y) in the plane

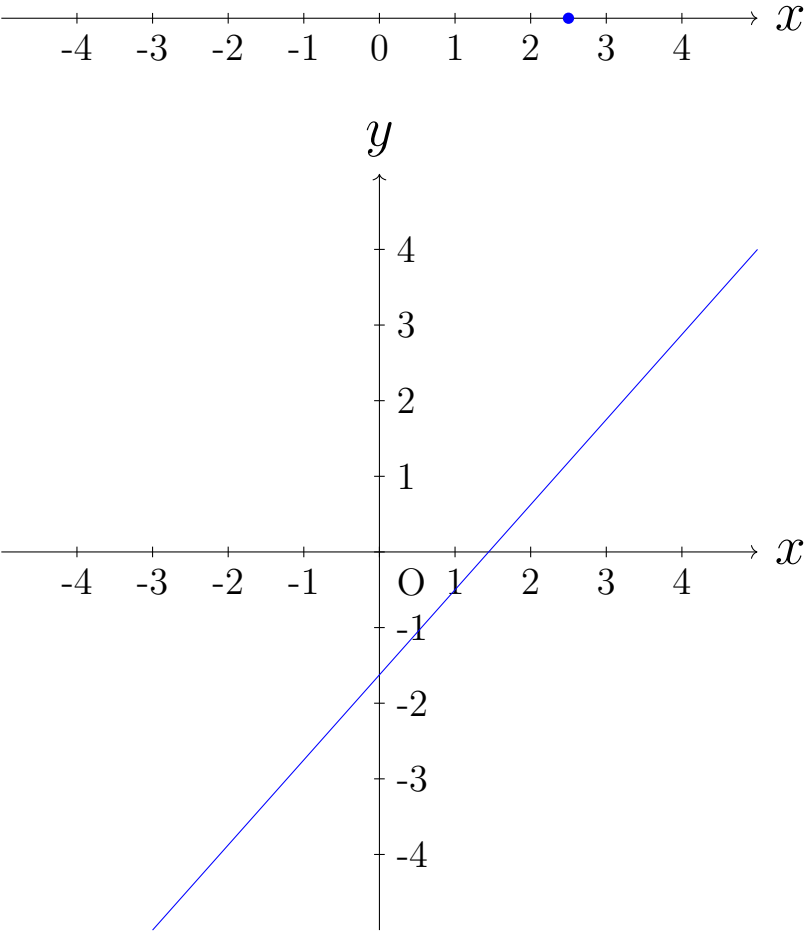
Notation: Sets



$$S := \{(1, 1), (1, 2), (1, 3)\} \subset \mathbb{R}^2$$

A line, defined by points (x, y) in the plane so that $y = x - 1.7$

Notation: Sets

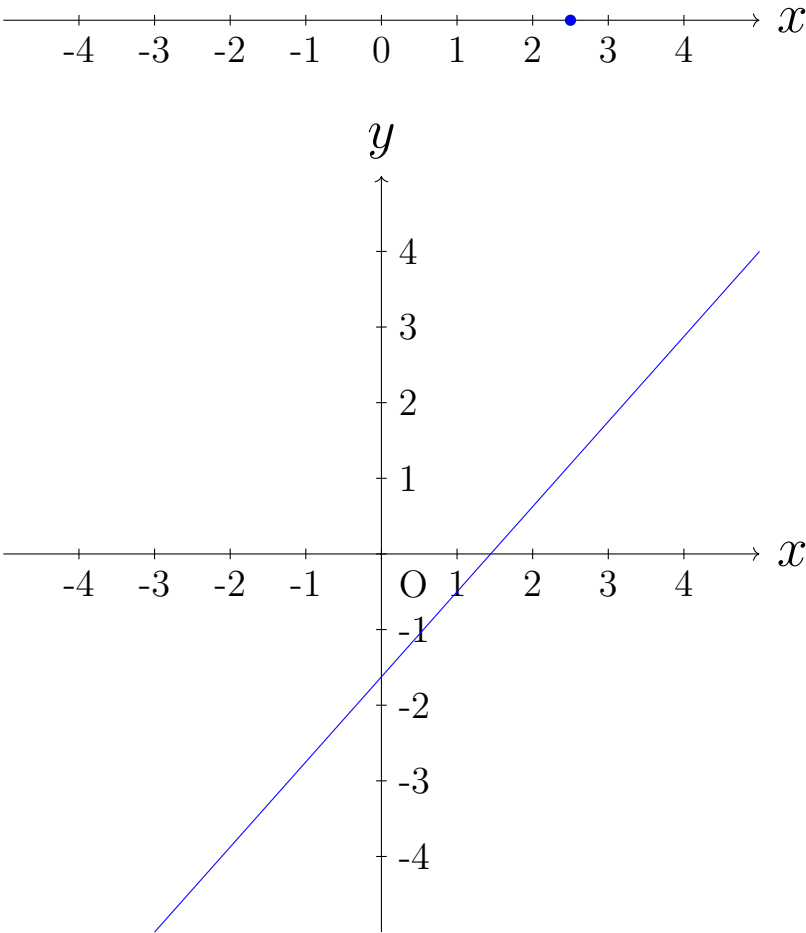


$$S := \{(1, 1), (1, 2), (1, 3)\} \subset \mathbb{R}^2$$

A line, defined by points (x, y) in the plane so that $y = x - 1.7$

$$\{???\}$$

Notation: Sets

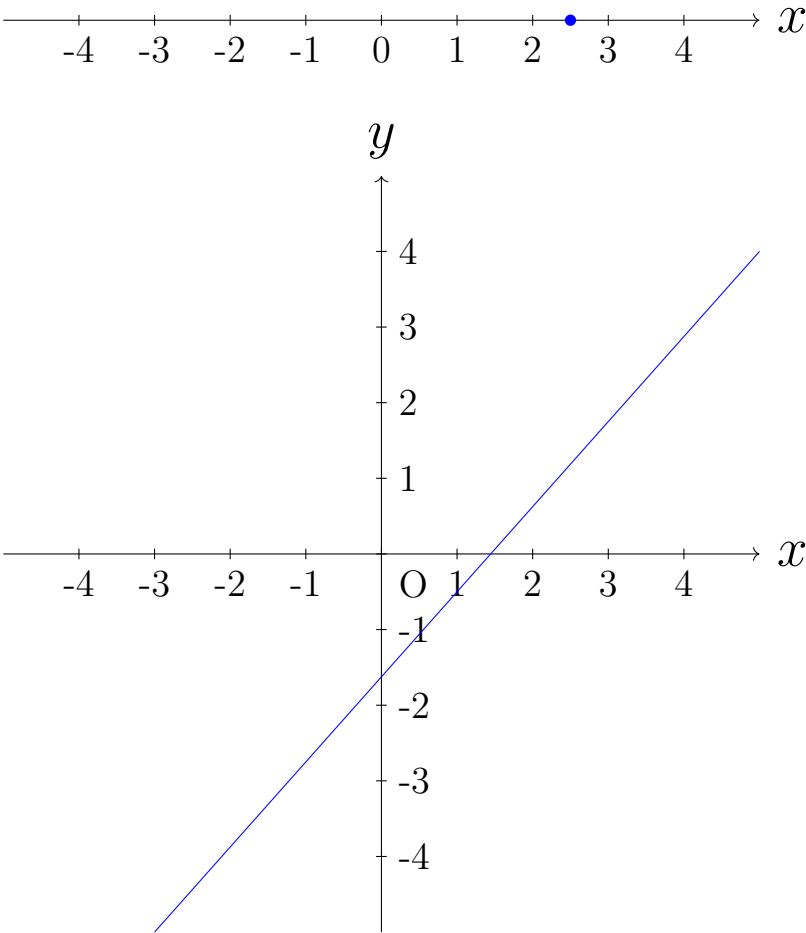


$$S := \{(1, 1), (1, 2), (1, 3)\} \subset \mathbb{R}^2$$

A line, defined by **points** (x, y) in the plane so that $y = x - 1.7$

$$\{(x, y)\}$$

Notation: Sets



$$S := \{(1, 1), (1, 2), (1, 3)\} \subset \mathbb{R}^2$$

A line, defined by points (x, y) in the plane so that $y = x - 1.7$

$$\{(x, y) \in \mathbb{R}^2\}$$

Notation: Sets



$$S := \{(1, 1), (1, 2), (1, 3)\} \subset \mathbb{R}^2$$

A line, defined by points (x, y) in the plane so that $y = x - 1.7$

$$\{(x, y) \in \mathbb{R}^2 \mid \}$$

Notation: Sets



$$S := \{(1, 1), (1, 2), (1, 3)\} \subset \mathbb{R}^2$$

A line, defined by points (x, y) in the plane so that $y = x - 1.7$

$$\{(x, y) \in \mathbb{R}^2 \mid y = x - 1.75\}$$

Notation: Sets



$$S := \{(1, 1), (1, 2), (1, 3)\} \subset \mathbb{R}^2$$

A line, defined by points (x, y) in the plane so that $y = x - 1.7$

$$C := \{(x, y) \in \mathbb{R}^2 \mid y = x - 1.75\}$$

Notation: Sets



$$S := \{(1, 1), (1, 2), (1, 3)\} \subset \mathbb{R}^2$$

A line, defined by points (x, y) in the plane so that $y = x - 1.7$

$$C := \{(x, y) \in \mathbb{R}^2 \mid y = x - 1.75\}$$

Examples.

1. \mathbb{R} : set of all real numbers. $2, \pi$ etc $\in \mathbb{R}$

Notation: Sets



$$S := \{(1, 1), (1, 2), (1, 3)\} \subset \mathbb{R}^2$$

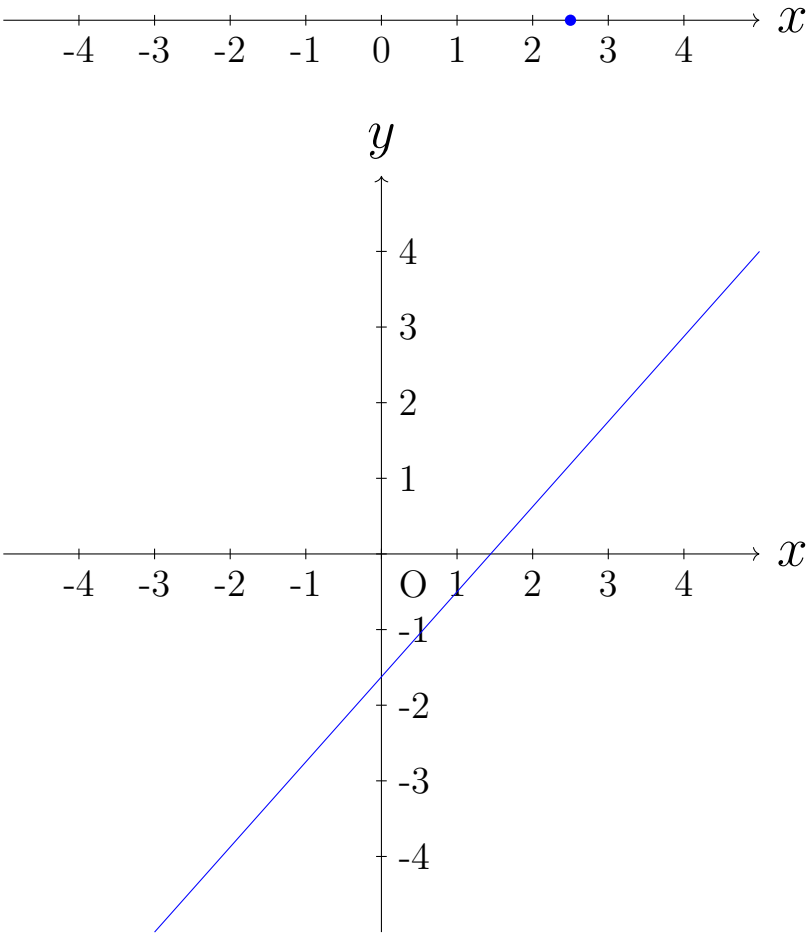
A line, defined by points (x, y) in the plane so that $y = x - 1.7$

$$C := \{(x, y) \in \mathbb{R}^2 \mid y = x - 1.75\}$$

Examples.

1. \mathbb{R} : set of all real numbers. $2, \pi$ etc $\in \mathbb{R}$
2. $\{x \in \mathbb{R}\}$

Notation: Sets



$$S := \{(1, 1), (1, 2), (1, 3)\} \subset \mathbb{R}^2$$

A line, defined by points (x, y) in the plane so that $y = x - 1.7$

$$C := \{(x, y) \in \mathbb{R}^2 \mid y = x - 1.75\}$$

Examples.

- 1. \mathbb{R} : set of all real numbers. $2, \pi$ etc $\in \mathbb{R}$
- 2. $\{x \in \mathbb{R} \mid \}$

Notation: Sets



$$S := \{(1, 1), (1, 2), (1, 3)\} \subset \mathbb{R}^2$$

A line, defined by points (x, y) in the plane so that $y = x - 1.7$

$$C := \{(x, y) \in \mathbb{R}^2 \mid y = x - 1.75\}$$

Examples.

1. \mathbb{R} : set of all real numbers. $2, \pi$ etc $\in \mathbb{R}$
2. $\{x \in \mathbb{R} \mid \alpha < x\}$

Notation: Sets



$$S := \{(1, 1), (1, 2), (1, 3)\} \subset \mathbb{R}^2$$

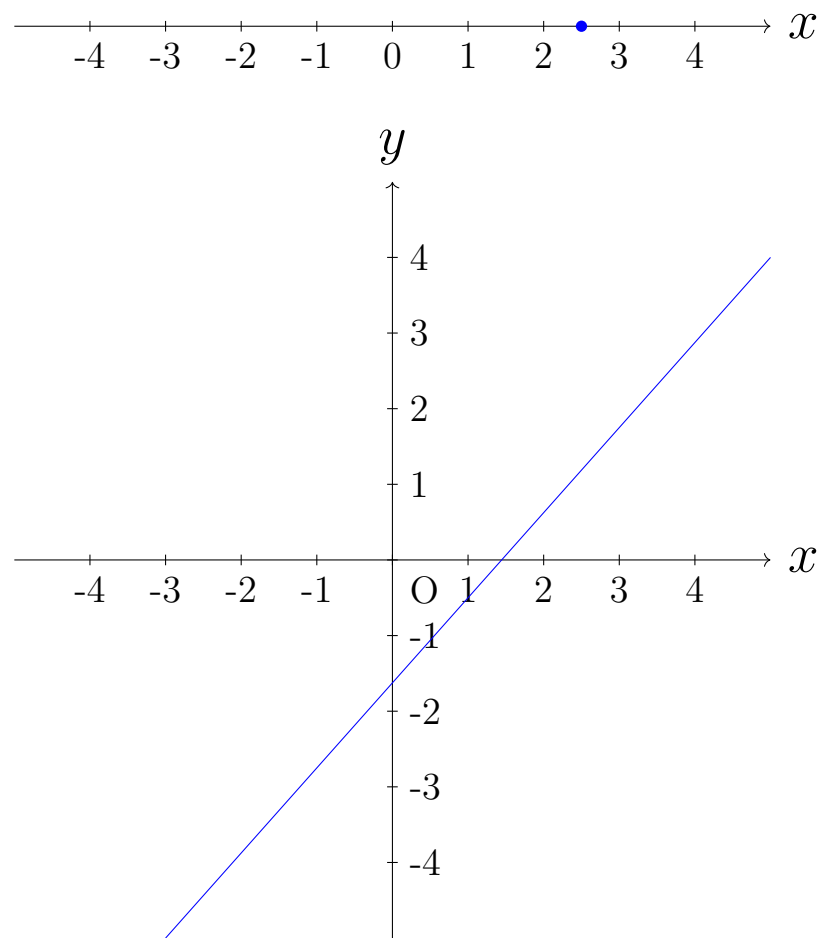
A line, defined by points (x, y) in the plane so that $y = x - 1.7$

$$C := \{(x, y) \in \mathbb{R}^2 \mid y = x - 1.75\}$$

Examples.

1. \mathbb{R} : set of all real numbers. $2, \pi$ etc $\in \mathbb{R}$
2. $\{x \in \mathbb{R} \mid \alpha < x < \beta\}$

Notation: Sets



$$S := \{(1, 1), (1, 2), (1, 3)\} \subset \mathbb{R}^2$$

A line, defined by points (x, y) in the plane so that $y = x - 1.7$

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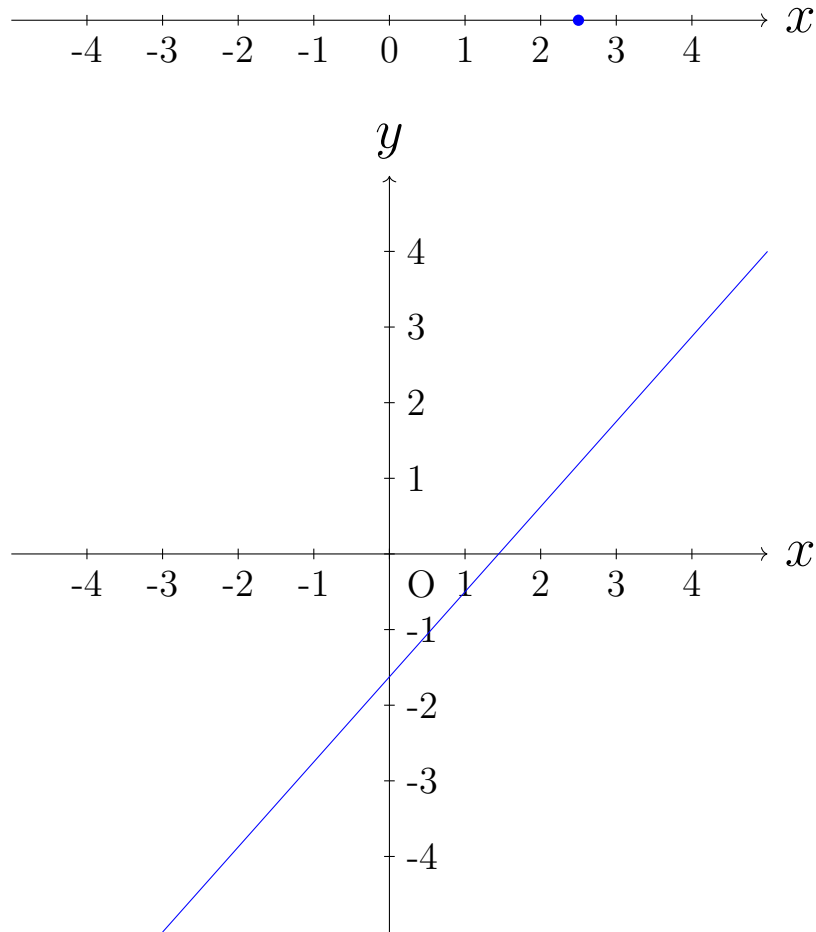
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3. $\{x \in \mathbb{R} \mid \alpha < x \leq \beta\}$

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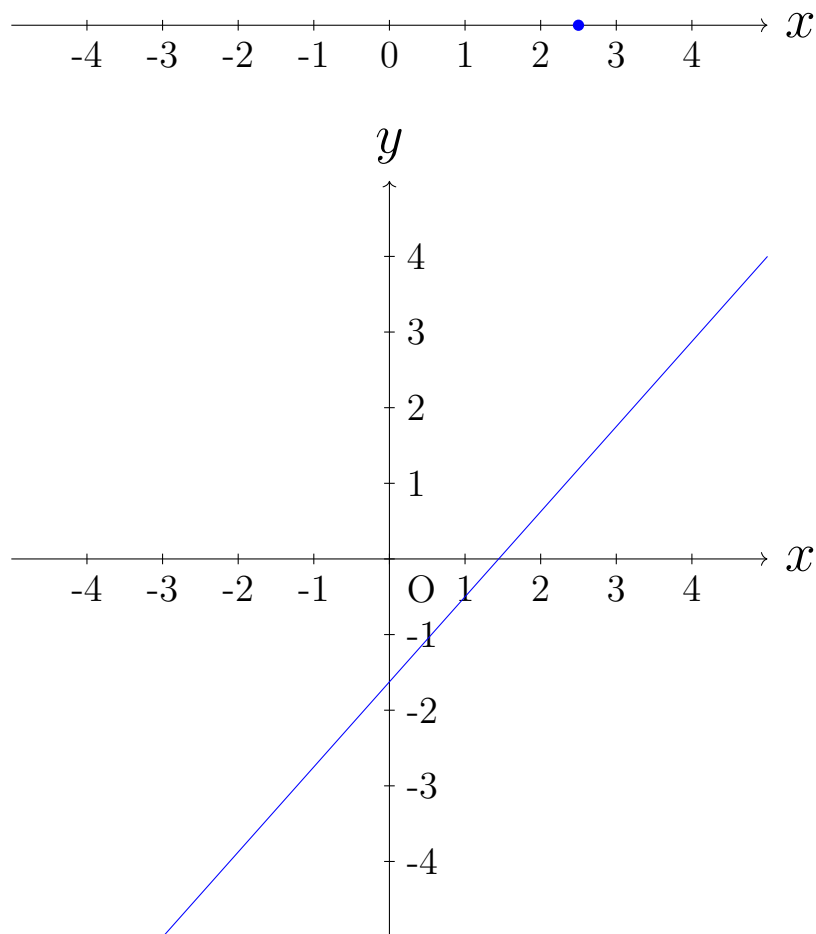
A line, defined by points (x, y) in the plane so that $y = x - 1.7$

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Notation: Sets



$$S := \{(1, 1), (1, 2), (1, 3)\} \subset \mathbb{R}^2$$

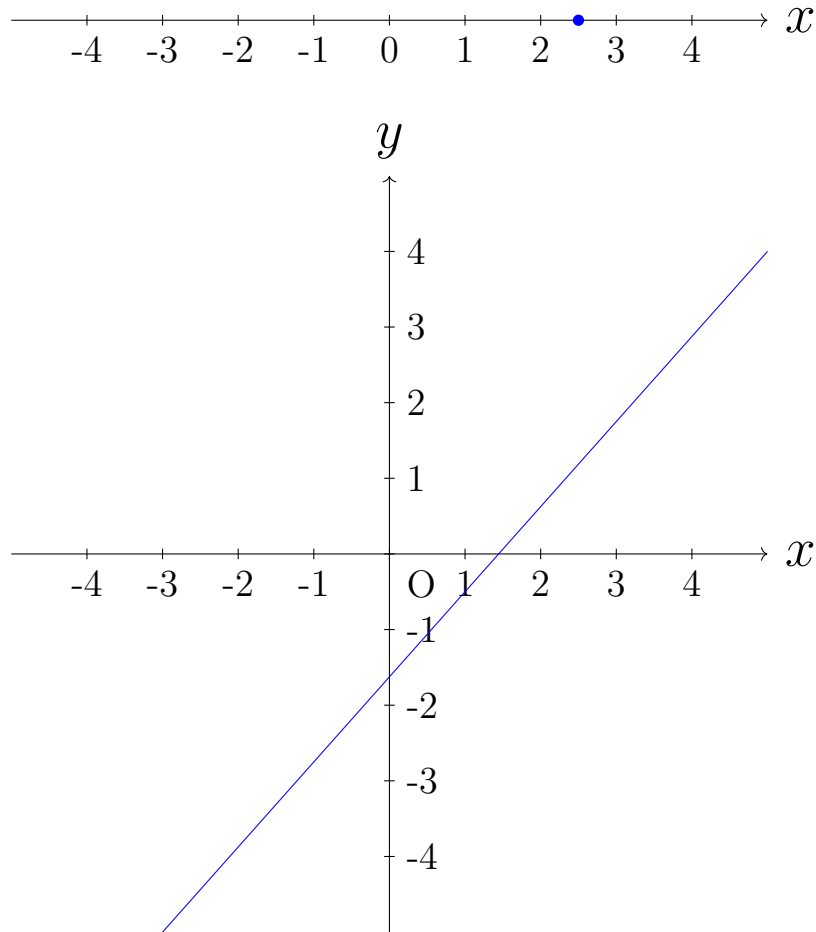
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4. $\{x \in \mathbb{R}\}$

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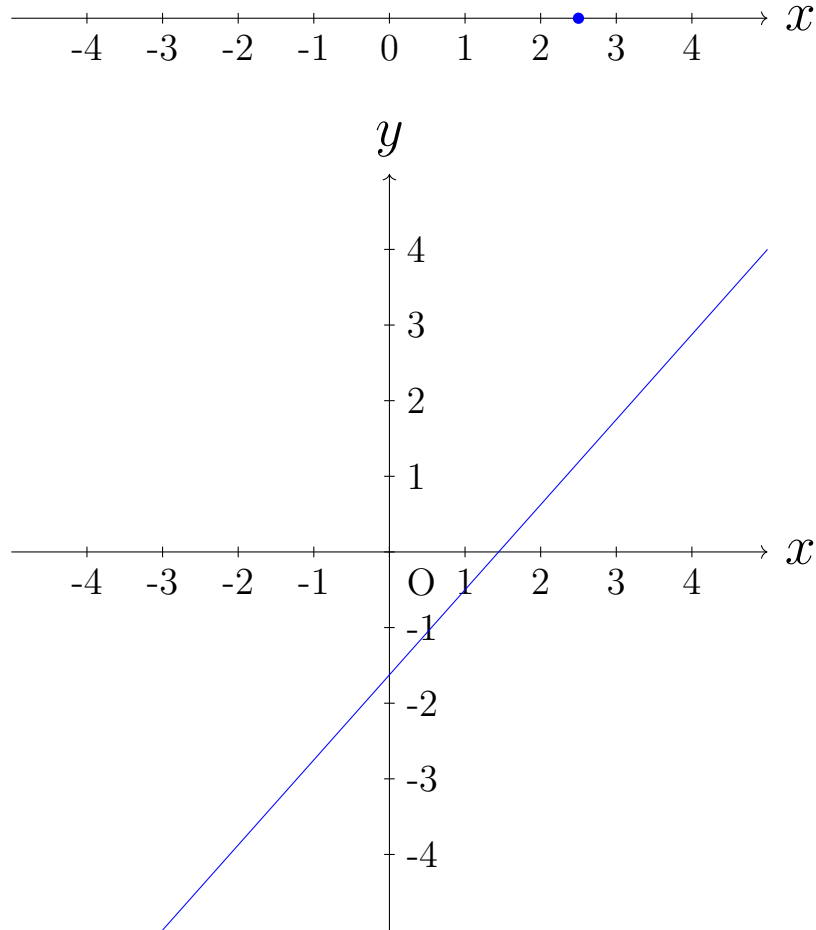
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5. $\{x \in \mathbb{R}\}$

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A line, defined by points (x, y) in the plane so that $y = x - 1.7$

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4. $[\alpha, \beta) := \{x \in \mathbb{R} \mid \alpha \leq x < \beta\}$
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Notation: Sets



$$S := \{(1, 1), (1, 2), (1, 3)\} \subset \mathbb{R}^2$$

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Notation: Sets



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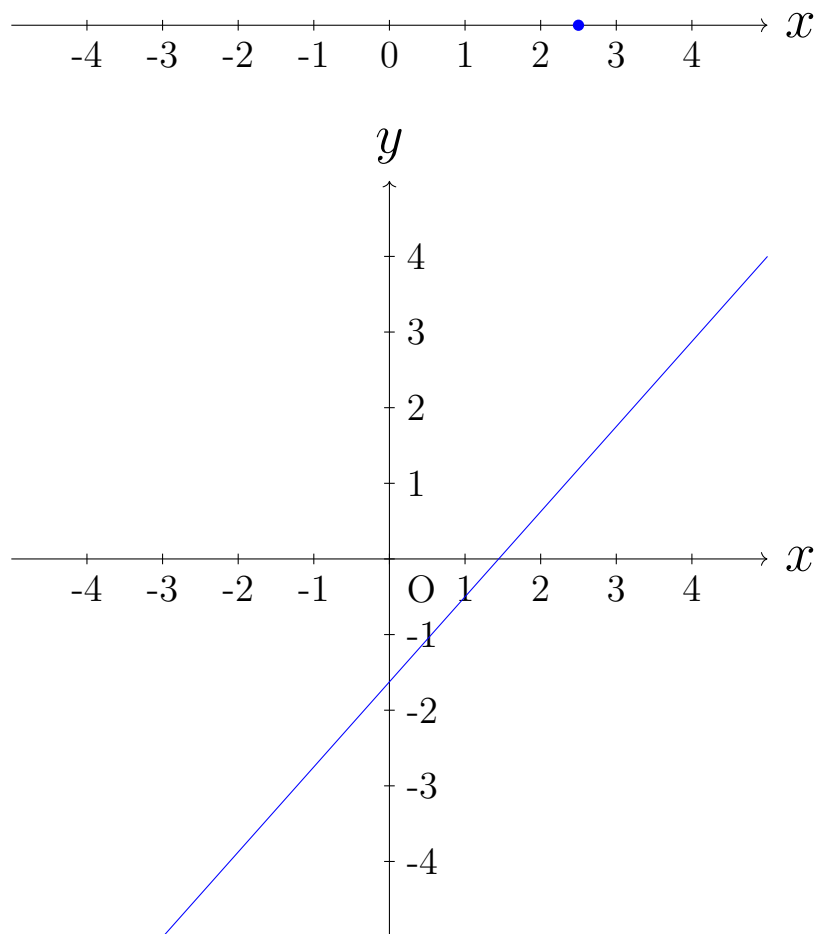
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Notation: Sets



$$S := \{(1, 1), (1, 2), (1, 3)\} \subset \mathbb{R}^2$$

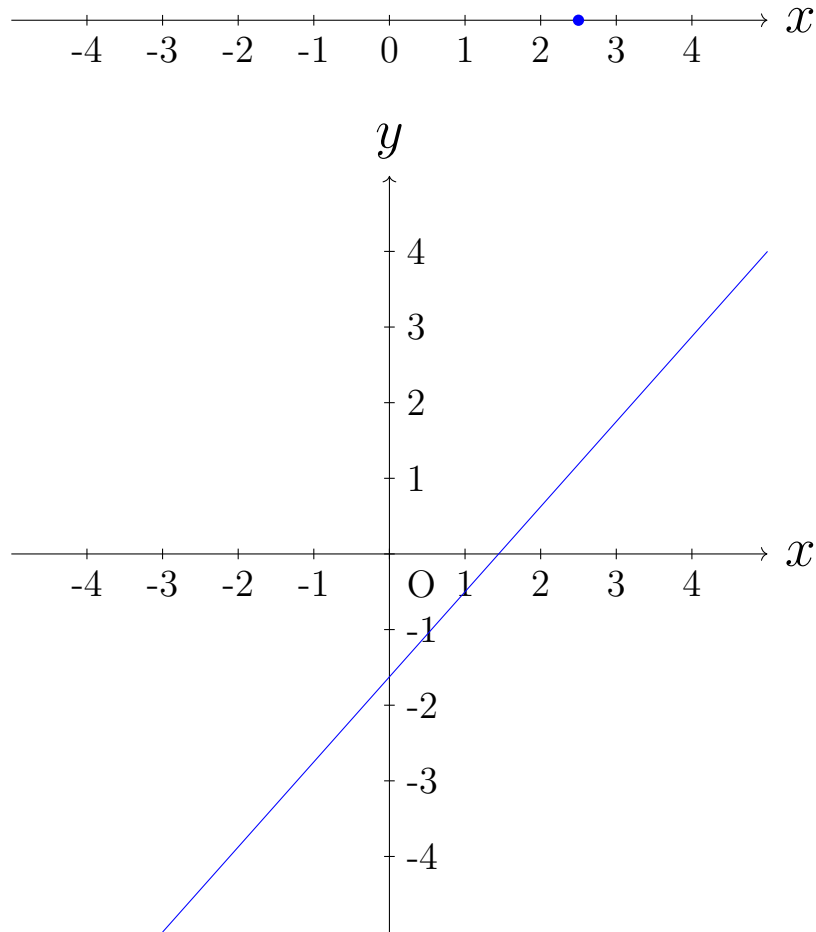
A line, defined by points (x, y) in the plane so that $y = x - 1.7$

$$C := \{(x, y) \in \mathbb{R}^2 \mid y = x - 1.75\}$$

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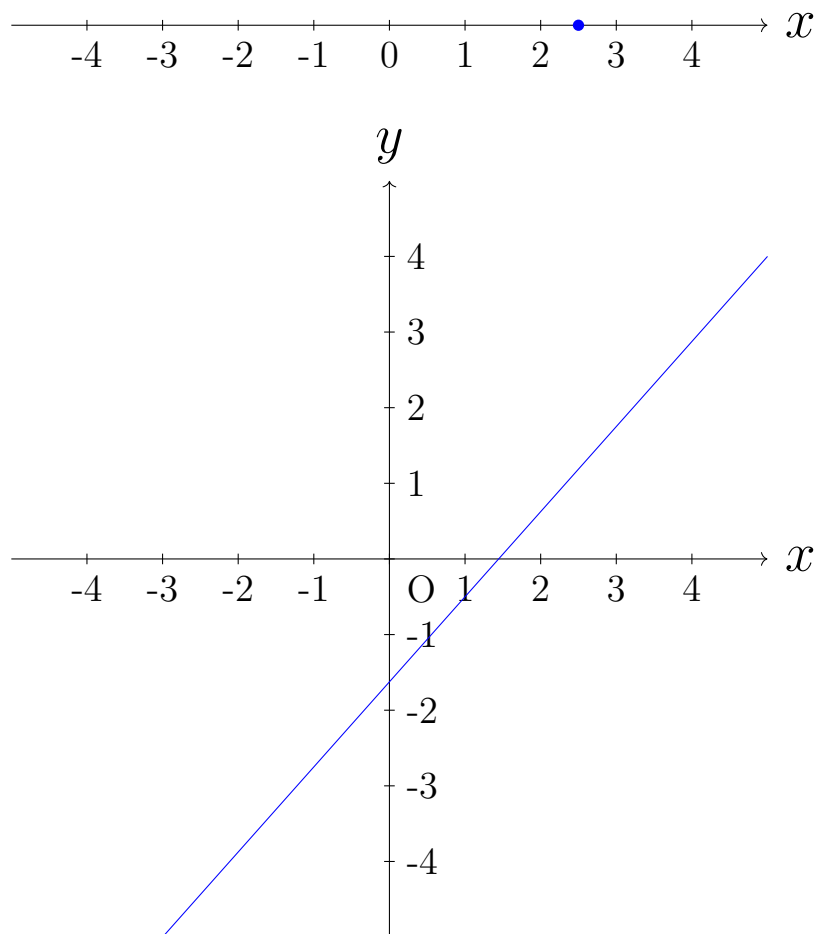
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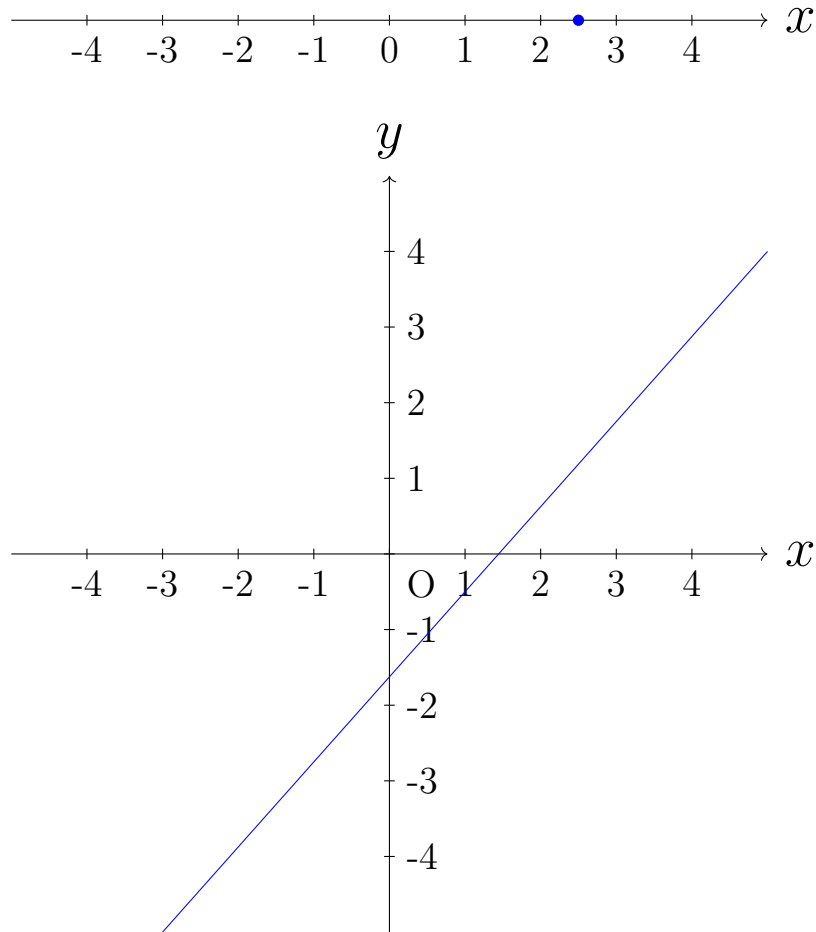
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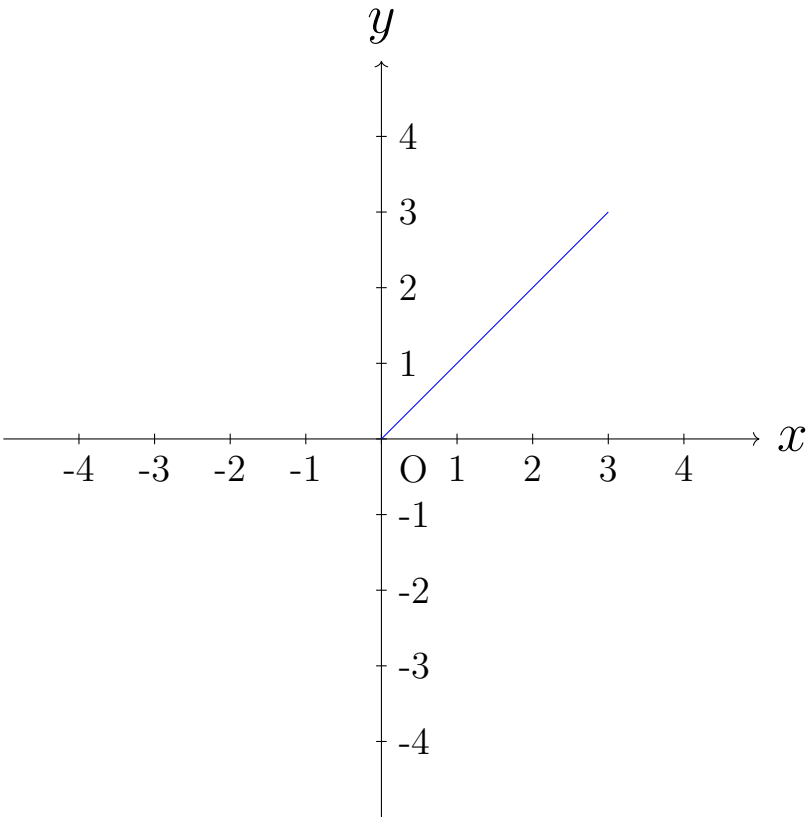
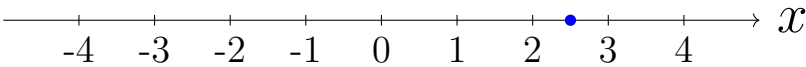
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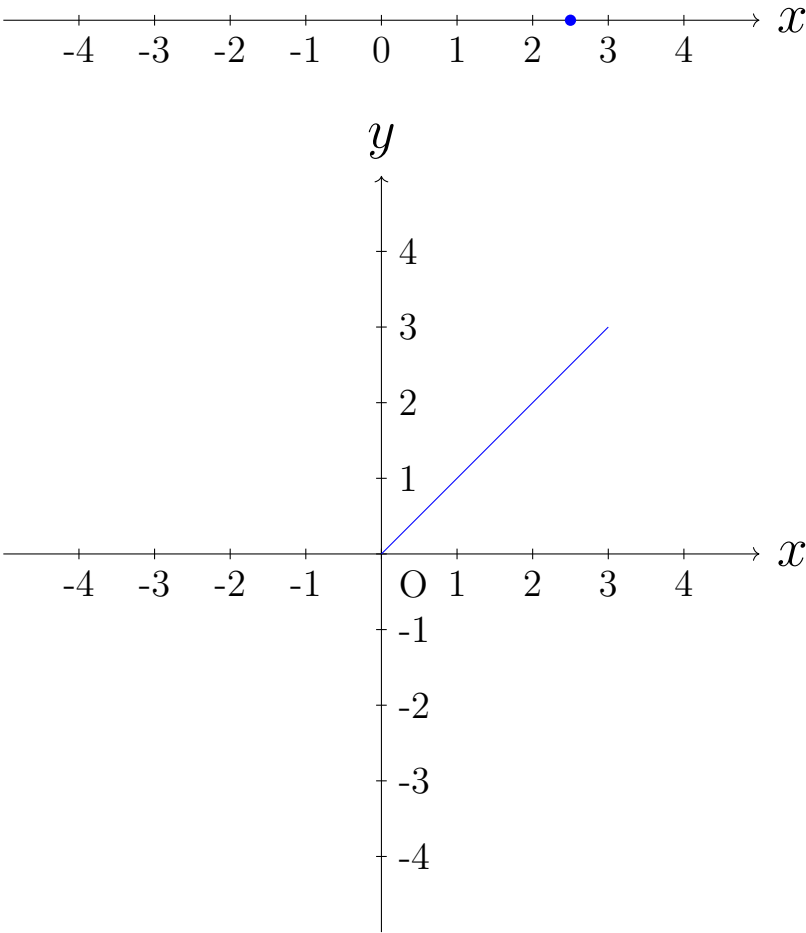
Notation: Sets

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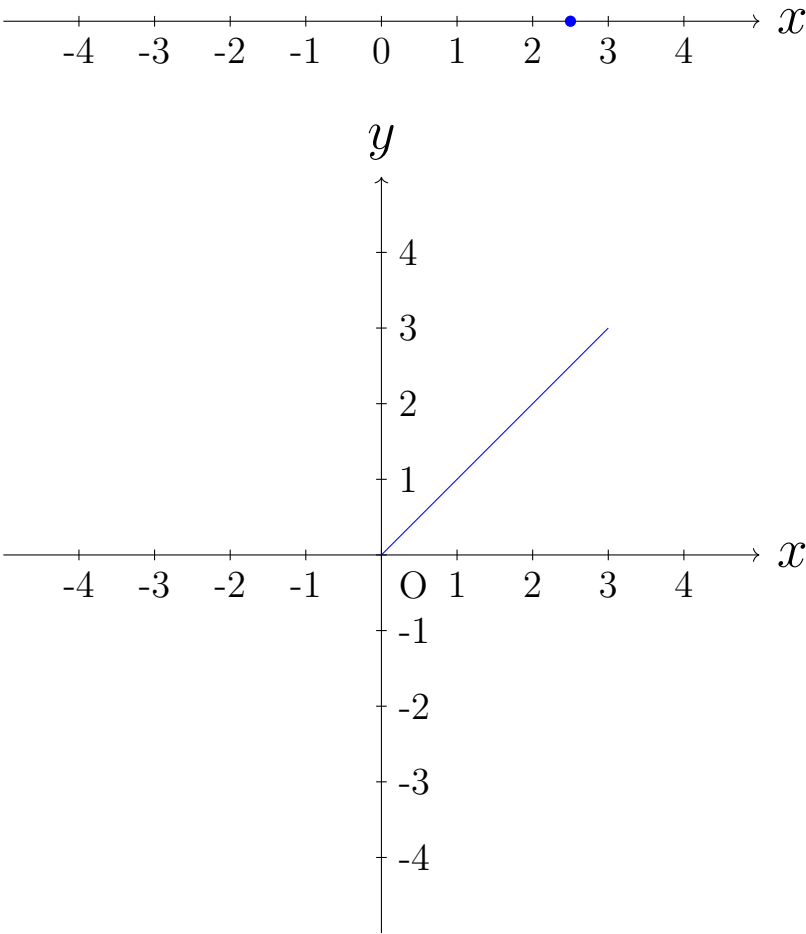
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$$\{(x,y)\}$$



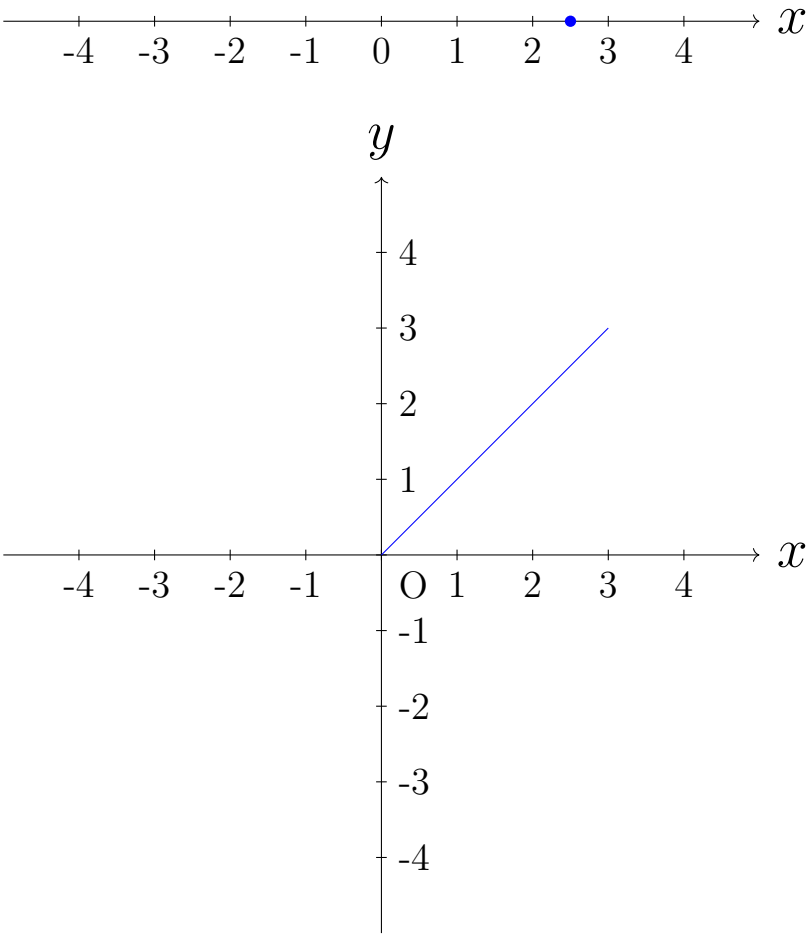
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$$\{(x,y) \in \mathbb{R}^2\}$$



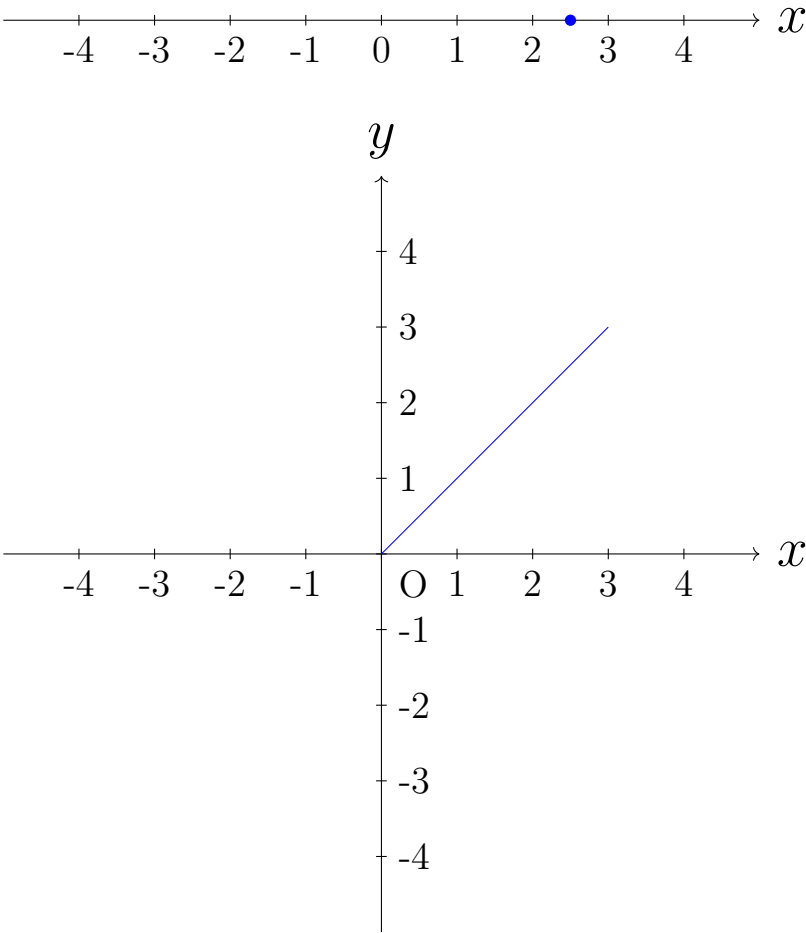
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$$\{(x,y) \in \mathbb{R}^2 \mid \}$$



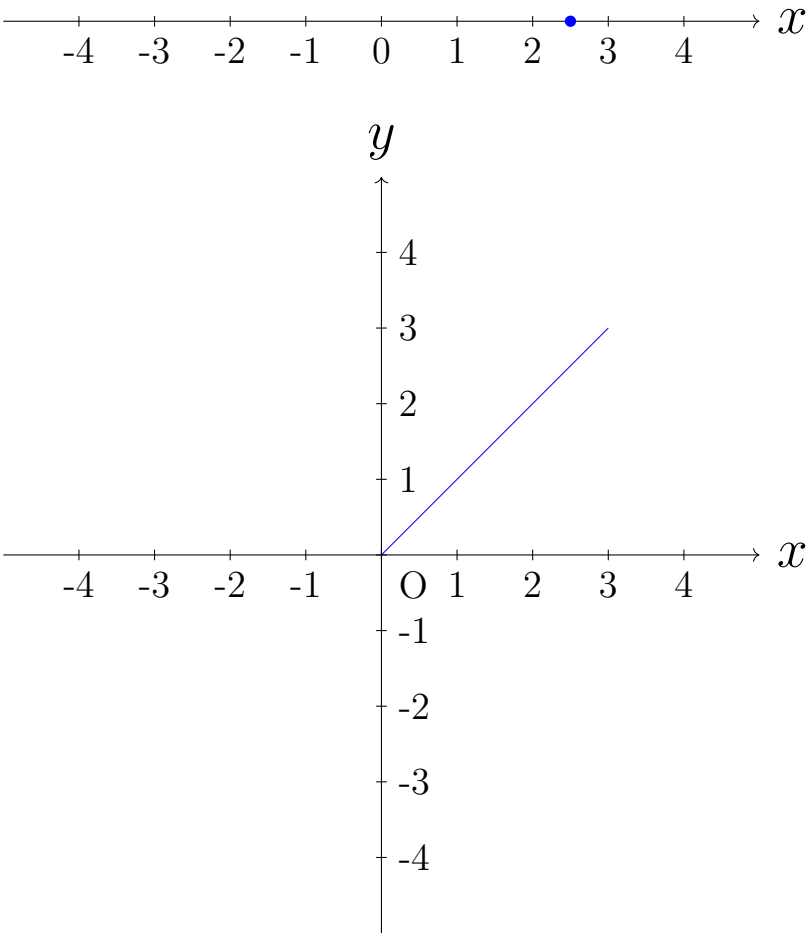
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$$\{(x, y) \in \mathbb{R}^2 \mid y = x\}$$



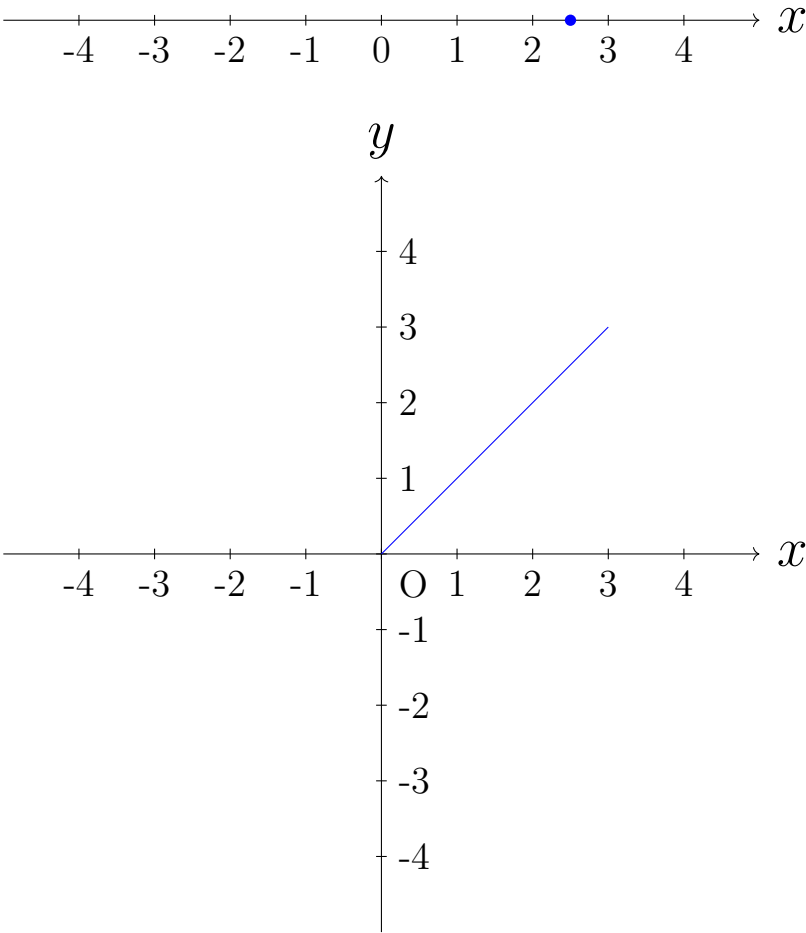
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$$\{(x, y) \in \mathbb{R}^2 \mid y = x, 0 < x\}$$



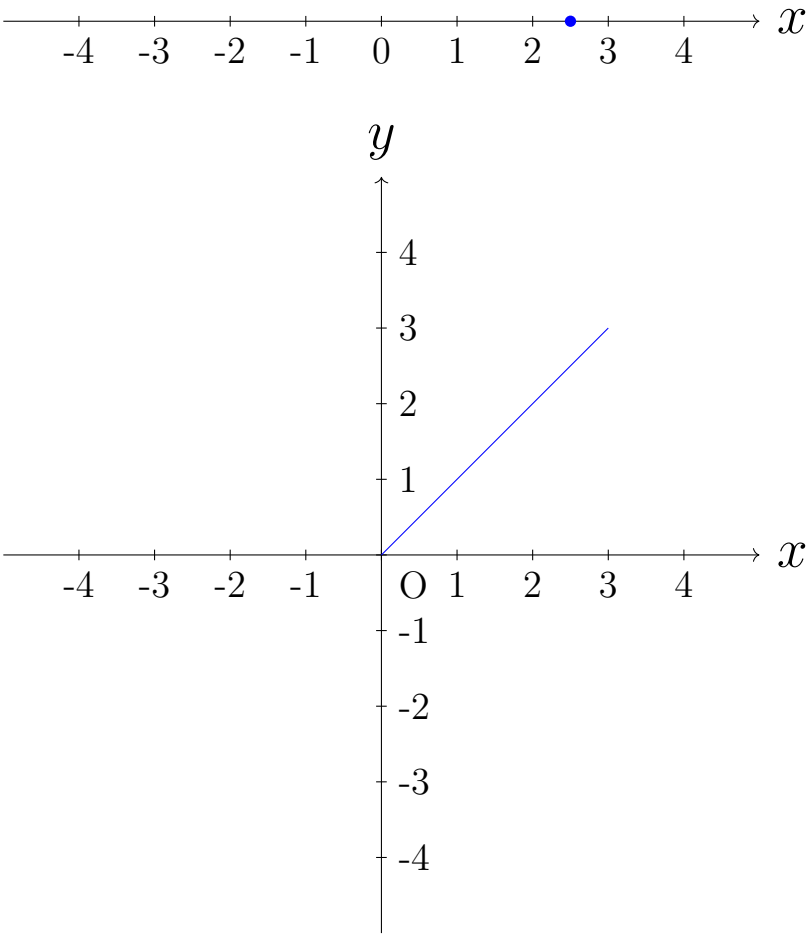
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$$\{(x, y) \in \mathbb{R}^2 \mid y = x, 0 < x < 3\}$$



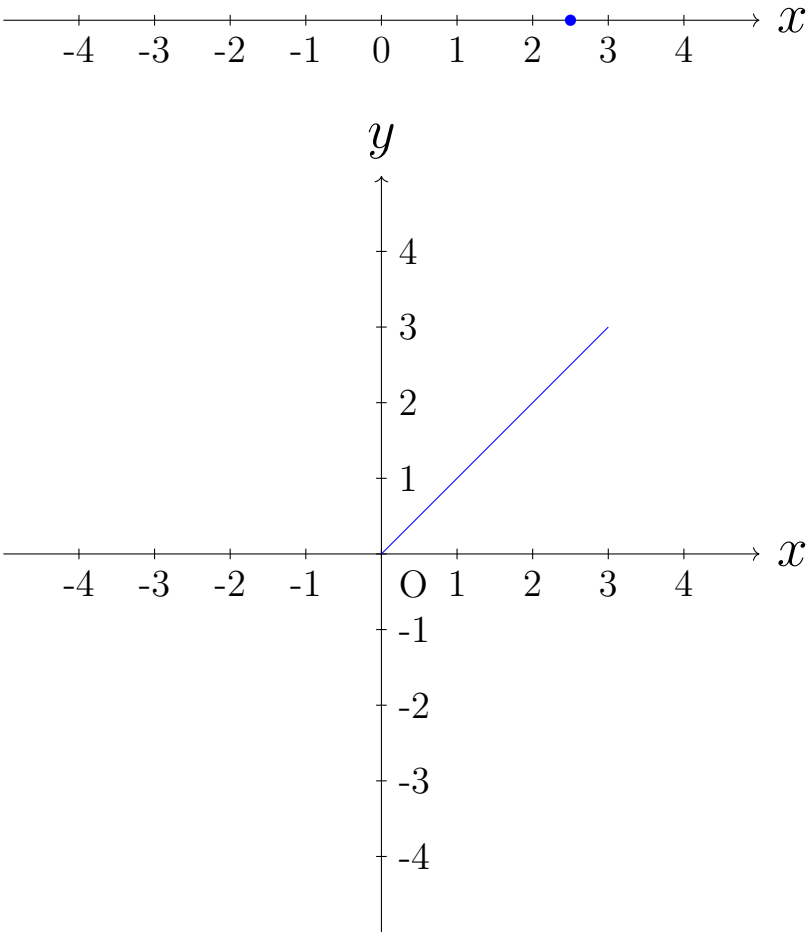
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$$L := \{(x, y) \in \mathbb{R}^2 \mid y = x, 0 < x < 3\}$$



Notation: Sets

$$L := \{(x, y) \in \mathbb{R}^2 \mid y = x, x \in (0, 3)\}$$



Notation: Functions

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\mathbb{R}

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$$\mathbb{R} \rightarrow \mathbb{R}$$

Notation: Functions

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

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$$\gamma : \mathbb{R} \rightarrow \mathbb{R}^2$$

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$$\gamma : \mathbb{R} \rightarrow \mathbb{R}^2$$

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

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Definition. A “parametrized plane curve”

Notation: Functions

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Definition. A “parametrized plane curve” is a function,
 γ

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Definition. A “parametrized plane curve” is a function,
 $\gamma : (\alpha, \beta)$

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$$g : \{1, 2\} \rightarrow \{1, 2, 3\}$$

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$$f : \mathbb{R}^2 \rightarrow \mathbb{R}$$

$$f(x, y) = x - y$$

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

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

Definition. A “parametrized plane curve” is a function,
 $\gamma : (\alpha, \beta) \rightarrow \mathbb{R}^2$.

Notation: Functions

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

$$f(x) = x - 1.75$$

$$\begin{aligned} g : \{1, 2\} &\rightarrow \{1, 2, 3\} \\ g(1) &= 3 \\ g(2) &= 1 \end{aligned}$$

$$f : \mathbb{R}^2 \rightarrow \mathbb{R}$$

$$f(x, y) = x - y$$

$$\begin{aligned} \gamma : (-\pi, \pi) &\rightarrow \mathbb{R}^2 \\ \gamma(t) &= (\cos(t), \sin(t)) \end{aligned}$$

Definition. A “parametrized plane curve” is a function,
 $\gamma : (\alpha, \beta) \rightarrow \mathbb{R}^2$.

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

Notation: Functions

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

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$$g : \{1, 2\} \rightarrow \{1, 2, 3\}$$

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$$f : \mathbb{R}^2 \rightarrow \mathbb{R}$$

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Set of points on the curve:

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Image γ

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Image $\gamma = \{(x, y) \in \mathbb{R}^2\}$

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