

# Our first LaTeX document

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## Abstract

A short first try.

## 1 Some Math expressions

1. Math formulas and expression are set with dollar signs.

$$1 + 2 + 3 = 6.$$

2. Type a fraction  $\frac{x-1}{x+1}$ .

3. Center an equation

$$a^2 + b^2 = c^2$$

or like this

$$E = mc^2$$

or a labelled equation

$$\sin x + \cos x = 1 \tag{1}$$

4. A sequence of equations lined up

$$\begin{aligned}(a - b)(a + b) &= aa - ba + ab - bb \\ &= aa - ab + ab - bb \\ &= a^2 - b^2\end{aligned}$$

5.  $\mathbb{N} = \{1, 2, 3, \dots\}$

$\mathbb{Z}$  is the set of integers.

## 2 Sets

**Definition 2.1.**  $x \in A \cap B$  if  $x \in A$  and  $x \in B$ .

**Theorem 2.2.**  $\overline{A \cap B} = \overline{A} \cup \overline{B}$  for all sets  $A, B$ .

*Proof.* Let  $x \in \overline{A \cap B}$ . Then ... □

Subscripts:  $a_1, a_{i_1} x_{12}$

## 3 Logic

Negation  $\neg P$  has the truth table

$P$	$\neg P$
$T$	$F$
$F$	$T$

## 4 Bonus: plotting functions

This requires loading an extra graphics package called pgfplots. The following example is taken from <https://tex.stackexchange.com/questions/231052/plotting-fx-sin-x-and-fx-cos-x-on-pgf-tikz>

