# Example LaTeX Document

Darren Tapp

January 9, 2020

LaTeX is a markup language that is intended to produce beautiful mathematics. We can display an equation;

$$x + 3 = 5.$$

or mathematics could be in line as $x = 2$.

\ usually preceeds a command. $ is also a special symbol that denotes math mode. One dollar sign for $\sum_{i=1}^{n} i$ if you want the text inline. Two dollar signs if you want to display

$$\frac{\partial \psi}{\partial t}$$

However I prefer \[ and \] to display equations.

Do you want to define a linear map $L : \mathbb{R}^2 \to \mathbb{R}^3$? We could could let $L$ be an embedding of $\mathbb{R}^2$ into $\mathbb{R}^3$.

$$(x, y) \mapsto (x, y, 0)$$

Note I get tired of typing `{\mathbb R}` so I defined a macro above. I now can type about $\mathbb{R}$ all day long.

For some reason I would like to give an example of a matrix.

$$\begin{bmatrix} 1 & 1 & 0 \\ 0 & 1 & 2 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix} = \begin{bmatrix} 3 \\ 8 \\ 3 \end{bmatrix}$$

This document uses two packages with the `\usepackage` declaration above. `amssymb` is used for the blackboard bold $\mathbb{R}$. `amsmath` is used to make the matrices easier to type.