MAS116: LAB 3 EXPERIMENTS

SIMON WILLERTON

1. Typesetting practice

(1) The formula for the addition of velocities in relativistic mechanics is

$$f(u,v) = \frac{u+v}{1+\frac{uv}{c^2}}.$$

(2) TeXmaker makes it easy to find Greek letters and to typeset things like

$$\Xi^{\Phi\Omega} = \frac{\theta}{\gamma}.$$

(3) Pointing and clicking in TeXmaker also helps with things like the following:

$$\underbrace{\circlearrowleft \dots \circlearrowleft}_{n \text{ times}}.$$

(4) Typically we use $\mathbb{R}$ to denote the real numbers and $\mathbb{C}$ to denote the complex numbers.

2. The square-root of 2

We are going to investigate a solution of the equation

$$x^2 = 2. \tag{1}$$

Definition 2.1. The positive solution to equation (1) is denoted $\sqrt{2}$.

Lemma 2.2. *Any rational number can be written in the form a/b with a and b coprime integers.*

Proof. Suppose that we have a rational number p/q where p and q are integers with $q \neq 0$. Blah blah blah. □

Theorem 2.3. *The real number $\sqrt{2}$ is irrational.*

Proof. We prove this by contradiction. First we assume that $\sqrt{2}$ is rational and so can be written as a/b for *coprime* integers a and b. Blah blah blah. □

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