1 Introduction

This is a simple document to get you up and running with LaTeX. See the *f*uzz manual (`http://spivey.oriel.ox.ac.uk/mike/fuzz/fuzzman.pdf`) for a good introduction to the symbols we use.

2 Maths

We drop into math-font simply: the variable, $x \in \{1, 2, 3\}$.

3 Types, etc.

This is a basic definition:

$[A]$

This is a free type definition:

$B ::= b1 \mid b2$

This is an axiomatic definition:

$$var_1, var_2 : B$$
$$var_1 \neq var_2$$

This is an abbreviation:

$Pair == A \times B$

And here's a generic axiomatic definition:

$$[X, Y]$$
$$first : (X \times Y) \to X$$
$$second : (X \times Y) \to Y$$
$$\forall x : X;\ y : Y \bullet first\,(x, y) = x$$
$$\forall x : X;\ y : Y \bullet second\,(x, y) = y$$

4 Proofs

This is how to format a proof:

$$\begin{aligned} & (1 \times 2) + 3 \\ = {} & 2 + 3 && \text{[definition of multliplication]} \\ = {} & 5 && \text{[definition of addition]} \end{aligned}$$

5 Proof trees

$$\dfrac{\dfrac{\lceil p \wedge p \rceil^{[1]}}{p}\,[\wedge\text{−elim}]}{(p \wedge p) \Rightarrow p}\,[\Rightarrow\text{−intro}^{[1]}]$$

$$\dfrac{p \vee q \qquad \dfrac{\lceil p \rceil^{[1]}}{q \vee p}\,[\vee\text{−intro}] \qquad \dfrac{\lceil q \rceil^{[1]}}{q \vee p}\,[\vee\text{−intro}]}{q \vee p}\,[\vee\text{−elim}^{[1]}]$$

Here's an example from the solutions.
In one direction:

$$\dfrac{\lceil (p \wedge q) \vee (p \wedge r) \rceil^{[3]} \qquad \dfrac{\dfrac{\lceil p \wedge q \rceil^{[4]}}{p}\,[\wedge\text{−elim1}] \qquad \dfrac{\lceil p \wedge q \rceil^{[4]}}{q}\,[\wedge\text{−elim2}]}{p \wedge (q \vee r)}\,[\wedge\text{−intro}] \qquad \dfrac{\dfrac{\lceil p \wedge r \rceil^{[4]}}{p}\,[\wedge\text{−elim1}] \qquad \dfrac{\lceil p \wedge r \rceil^{[4]}}{r}\,[\wedge\text{−elim2}]}{p \wedge (q \vee r)}\,[\wedge\text{−intro}]}{p \wedge (q \vee r)}\,[\vee\text{−elim}^{[4]}]$$
$$\dfrac{}{((p \wedge q) \vee (p \wedge r)) \Rightarrow (p \wedge (q \vee r))}\,[\Rightarrow\text{−intro}^{[3]}]$$

and the other:

$$\dfrac{\dfrac{\dfrac{\dfrac{\lceil p \wedge (q \vee r)\rceil^{[1]}}{p}\,[\wedge\text{−elim1}] \qquad \lceil r\rceil^{[2]}}{p \wedge r}\,[\wedge\text{−intro}]}{(p \wedge q) \vee (p \wedge r)}\,[\vee\text{−intro2}] \qquad \dfrac{\dfrac{\dfrac{\lceil p \wedge (q \vee r)\rceil^{[1]}}{p}\,[\wedge\text{−elim1}] \qquad \lceil q\rceil^{[2]}}{p \wedge q}\,[\wedge\text{−intro}]}{(p \wedge q) \vee (p \wedge r)}\,[\vee\text{−intro1}] \qquad \dfrac{\dfrac{\lceil p \wedge (q \vee r)\rceil^{[1]}}{q \vee r}\,[\wedge\text{−elim2}]}{}}{(p \wedge q) \vee (p \wedge r)}\,[\vee\text{−elim}^{[2]}]}{(p \wedge (q \vee r)) \Rightarrow ((p \wedge q) \vee (p \wedge r))}\,[\Rightarrow\text{−intro}^{[1]}]$$