1 Introduction

This is a simple document to get you up and running with LaTeX. See the fUZZ 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:

$$\begin{array}{|l}
var_1, var_2 : B \\
\hline
var_1 \neq var_2
\end{array}$$

This is an abbreviation:

$Pair == A \times B$

And here's a generic axiomatic definition:

$$\begin{array}{|l}
\hline
[X, Y] \\
\hline
first : (X \times Y) \rightarrow X \\
second : (X \times Y) \rightarrow Y \\
\hline
\forall x : X; \ y : Y \bullet first (x, y) = x \\
\forall x : X; \ y : Y \bullet second (x, y) = y \\
\hline
\end{array}$$

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

$$\cfrac{\cfrac{\lceil p \wedge p \rceil^{[1]}}{p} \ [\wedge\mathrm{-elim}]}{(p \wedge p) \Rightarrow p} \ [\Rightarrow\mathrm{-intro}^{[1]}]$$

$$\cfrac{p \vee q \quad \cfrac{\lceil p \rceil^{[1]}}{q \vee p} \ [\vee\mathrm{-intro}] \quad \cfrac{\lceil q \rceil^{[1]}}{q \vee p} \ [\vee\mathrm{-intro}]}{q \vee p} \ [\vee\mathrm{-elim}^{[1]}]$$

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

$$\cfrac{\lceil (p \wedge q) \vee (p \wedge r) \rceil^{[3]} \quad \cfrac{\cfrac{\lceil p \wedge q \rceil^{[4]}}{p} \ [\wedge\mathrm{-elim1}] \quad \cfrac{\cfrac{\lceil p \wedge q \rceil^{[4]}}{q} \ [\wedge\mathrm{-elim2}]}{q \vee r} \ [\vee\mathrm{-intro1}]}{p \wedge (q \vee r)} \ [\wedge\mathrm{-intro}] \quad \cfrac{\cfrac{\lceil p \wedge r \rceil^{[4]}}{p} \ [\wedge\mathrm{-elim1}] \quad \cfrac{\cfrac{\lceil p \wedge r \rceil^{[4]}}{r} \ [\wedge\mathrm{-elim2}]}{q \vee r} \ [\vee\mathrm{-intro2}]}{p \wedge (q \vee r)} \ [\wedge\mathrm{-intro}]}{\cfrac{p \wedge (q \vee r)}{((p \wedge q) \vee (p \wedge r)) \Rightarrow (p \wedge (q \vee r))} \ [\Rightarrow\mathrm{-intro}^{[3]}]} \ [\vee\mathrm{-elim}^{[4]}]$$

and the other:

$$\cfrac{\cfrac{\lceil p \wedge (q \vee r) \rceil^{[1]}}{p} \ [\wedge-\text{elim1}] \qquad \lceil r \rceil^{[2]}}{\cfrac{p \wedge r}{(p \wedge q) \vee (p \wedge r)} \ [\vee-\text{intro2}]} \ [\wedge-\text{intro}]$$

$$\cfrac{\cfrac{\lceil p \wedge (q \vee r) \rceil^{[1]}}{p} \ [\wedge-\text{elim1}] \qquad \lceil q \rceil^{[2]}}{\cfrac{p \wedge q}{(p \wedge q) \vee (p \wedge r)} \ [\vee-\text{intro1}]} \ [\wedge-\text{intro}]$$

$$\cfrac{\cfrac{\cfrac{\lceil p \wedge (q \vee r) \rceil^{[1]}}{q \vee r} \ [\wedge-\text{elim2}]}{\cfrac{(p \wedge q) \vee (p \wedge r)}{(p \wedge (q \vee r)) \Rightarrow ((p \wedge q) \vee (p \wedge r))} \ [\Rightarrow-\text{intro}^{[1]}]}}{} \ [\vee-\text{elim}^{[2]}]$$