Individual 1

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Introduction to Proof and Problem Solving

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Theorem x.yz. Delete this text and write theorem statement here.

Proof. Blah, blah, blah. Here is an example of the `align` environment:

$$\begin{aligned}
\sum_{i=1}^{k+1} i &= \left(\sum_{i=1}^{k} i\right) + (k+1) \\
&= \frac{k(k+1)}{2} + k + 1 && \text{(by inductive hypothesis)} \\
&= \frac{k(k+1) + 2(k+1)}{2} \\
&= \frac{(k+1)(k+2)}{2} \\
&= \frac{(k+1)((k+1)+1)}{2}.
\end{aligned}$$

□

Theorem x.yz. Let $n \in \mathbb{Z}$. Then yada yada.

Proof. Blah, blah, blah. I'm so smart. □

Problem 1. Create and fill in a truth table for the logical formula

$$((P \vee Q) \implies R) \implies ((P \implies R) \wedge (Q \implies R)). \tag{1}$$

You probably will want to use the `tabular` or `array` environment, as well as the `table` environment (to add a caption, for example). Your truth table should have at least four columns (for the propositions P, Q, R and the large formula (1)) and nine rows (one for each possible combination of truth values of P, Q and R plus a top row labeling the columns). *Warning*: Formula (1) may take up too much space if you include it as a column label in your table. Think carefully about how to resolve this problem.

Solution. Blah blah blah

P	Q	R	$((P \Longrightarrow R) \wedge (Q \Longrightarrow R))$
T	T	T	T

Table 1: Table with 4 columns and nine rows

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