Review of Logic

You should know the following facts and definitions.

### Connectives

<table>
<thead>
<tr>
<th>$p$</th>
<th>$q$</th>
<th>$p \land q$</th>
<th>$p \lor q$</th>
<th>$\sim p$</th>
<th>$p \rightarrow q$</th>
<th>$p \leftrightarrow q$</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>T</td>
<td>T</td>
<td>T</td>
<td>F</td>
<td>T</td>
<td>T</td>
</tr>
<tr>
<td>T</td>
<td>F</td>
<td>F</td>
<td>T</td>
<td>F</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>F</td>
<td>T</td>
<td>F</td>
<td>T</td>
<td>T</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>F</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>T</td>
<td>T</td>
<td>T</td>
</tr>
</tbody>
</table>

### Negation of simple statements

<table>
<thead>
<tr>
<th>Statement</th>
<th>Negation</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>Some...not</td>
</tr>
<tr>
<td>Some</td>
<td>No</td>
</tr>
<tr>
<td>Some...not</td>
<td>All</td>
</tr>
<tr>
<td>No</td>
<td>Some</td>
</tr>
</tbody>
</table>

### Negation of compound statements (Logical Equivalences)

\[
\sim (p \lor q) \iff (\sim p \land \sim q)
\]
\[
\sim (p \land q) \iff (\sim p \lor \sim q)
\]
\[
\sim (p \rightarrow q) \iff (p \land \sim q)
\]
\[
\sim (\sim p) \iff p
\]