CS200 - Worksheet 2

We will use the following definitions (image taken from *Discrete Mathematics, an Open Introduction* by Levin):

Logical Connectives

- $P \wedge Q$ means P and Q, called a **conjunction**.
- $P \vee Q$ means P or Q, called a **disjunction**.
- $P \rightarrow Q$ means if P then Q, called an **implication** or **conditional**.
- $P \leftrightarrow Q$ means P if and only if Q, called a **biconditional**.
- $\neg P$ means not P, called a **negation**.

The **truth value** of a statement is determined by the truth value(s) of its part(s), depending on the connectives:

Truth Conditions for Connectives

- $P \wedge Q$ is true when both P and Q are true
- $P \vee Q$ is true when P or Q or both are true.
- $P \rightarrow Q$ is true when P is false or Q is true or both.
- $P \leftrightarrow Q$ is true when P and Q are both true, or both false.
- $\neg P$ is true when P is false.