

Let  $P$  and  $Q$  be propositions, then we define

- 1 "P AND Q",  $P \wedge Q$ , is true only if both  $P$  and  $Q$  are true;
- 2 "P OR Q",  $P \vee Q$ , is true if either or both of  $P$  and  $Q$  are true;
- 3 "NOT P",  $\neg P$ , that is true if  $P$  is false and false if  $P$  is true;
- 4 "P XOR Q",  $P \oplus Q$ , is true if one *but not both* of  $P$  and  $Q$  are true.