

# CSE 311: Foundations of Computing I

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## Section 3: Inference

### 1. Formal Proof (Direct Proof Rule)

Show that  $\neg p \rightarrow s$  follows from  $p \vee q$ ,  $q \rightarrow r$  and  $r \rightarrow s$ .

### 2. Formal Proof

Show that  $\neg p$  follows from  $\neg(\neg r \vee t)$ ,  $\neg q \vee \neg s$  and  $(p \rightarrow q) \wedge (r \rightarrow s)$ .

### 3. A Formal Proof in Predicate Logic

Prove  $\exists x (P(x) \vee R(x))$  from  $\forall x (P(x) \vee Q(x))$  and  $\forall y (\neg Q(y) \vee R(y))$ .