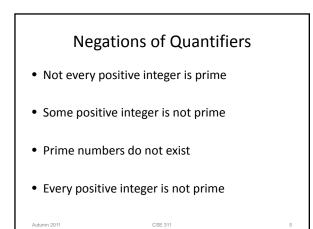
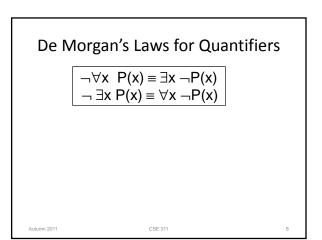
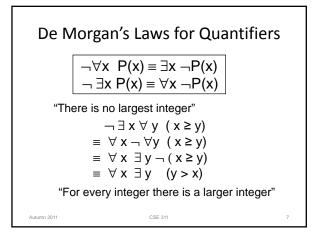


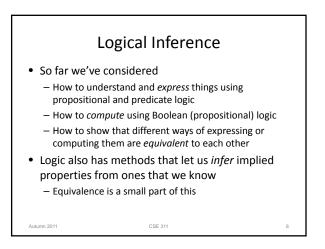
Quantification with two variables

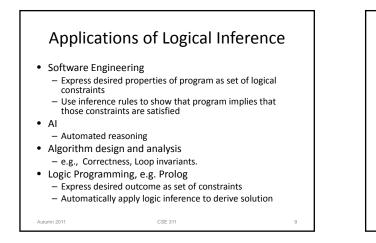
Expression	When true	When false
$\forall x \forall y P(x, y)$		
∃ x ∃ y P(x, y)		
∀ x∃ y P(x, y)		
∃ y ∀ x P(x, y)		





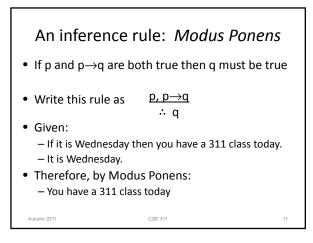








- Start with hypotheses and facts
- Use rules of inference to extend set of facts
- Result is proved when it is included in the set





- Show that r follows from p , p \rightarrow q, and q \rightarrow r
 - 1. p Given
 - 2. $p \rightarrow q$ Given
 - 3. $q \rightarrow r$ Given

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- 4. q Modus Ponens from 1 and 2
- 5. r Modus Ponens from 3 and 4

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