7.3 Valid and Invalid Arguments

Based on Implications
truth values placed
the hypothesis and conclusion
are determined by valid arguments

$P \rightarrow Q$

there are 4 valid
arguments that
follow logical rules

Direct Argument

$P \rightarrow Q$ is true
P is true

Q is true

If the pizza is hot, then
I eat 4 slices
The pizza is hot

Indirect Argument

$P \rightarrow Q$ is true
not Q is true
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not P

Chain Rule

$P \rightarrow Q$ true
$Q \rightarrow R$ true

$P \rightarrow R$ true

Or Rule

P or Q true
not Q

P is true

P or Q
not P

Q is true

Only one you change direction
and still be valid

Valid

Direct $P \to Q, P \therefore Q$

Indirect $P \to Q$, not $Q \therefore$ not P

chain $P \to Q, Q \to R \therefore P \to R$

Or P or Q, not $Q \therefore P$

Invalid

$P \to Q$

Q

$\therefore P$ can't assume true

$P \to Q$

not P

$\therefore$ not Q can't assume true