

## Inferences of Asymptotic Notations

1.  $A \neq \Theta(B) \Leftrightarrow A \neq \Omega(B) \vee A \neq O(B)$  (*Demorgan's Law*)
2.  $A = \omega(B) \rightarrow A = \Omega(B)$  (*By Definition*)
3.  $A \neq \Omega(B) \rightarrow A \neq \omega(B)$  (*Contrapositive of Rule 2*)
4.  $A = \omega(B) \rightarrow A \neq O(B)$  (*Complement*)  $\rightarrow A \neq \Theta(B)$  (*By Rule 1*)
5.  $A = o(B) \rightarrow A = O(B)$  (*By Definition*)
6.  $A \neq O(B) \rightarrow A \neq o(B)$  (*Contrapositive of Rule 5*)
7.  $A = o(B) \rightarrow A \neq \Omega(B)$  (*Complement*)  $\rightarrow A \neq \Theta(B)$  (*By Rule 1*)