



## Handout 9

## MATH 172 Lab: Sections 7 and 8

Lab Instructor (TA): Mohammed Kaabar

Student's Name:-----

Student's ID:-----

*Note: This handout covers some common and important inequalities for Direct Comparison Test or known as Comparison Test.*

- $-1 \leq \sin(n) \leq 1$
- $-1 \leq \cos(n) \leq 1$
- $0 \leq \sin^2(n) \leq 1$
- $0 \leq \cos^2(n) \leq 1$
- $\frac{\pi}{4} \leq \tan^{-1}(n) \leq \frac{\pi}{2}$  for all  $n \geq 1$
- $\ln(n) \geq 1$  for all  $n \geq e$
- $\ln(n) \leq n^m$  for any  $m > 0$
- $e^{-n} \leq 1$  for all  $n \geq 0$
- $e^n > n^m$  for any  $m > 0$

Common inequalities are amazing and can help us minimize the difficulty of selecting appropriate inequality for Direct Comparison Test  
Best Regards,  
Mohammed Kaabar