Calculus AB

1-3

(Day 3)

Evaluating Limits Analytically - Trig Limits

<u>Theorem</u>

$$\lim_{x \to 0} \frac{\sin x}{x} = 1$$

<u>Theorem</u>

$$\lim_{x \to 0} \frac{1 - \cos x}{x} = 0$$

Evaluate each limit.

1) $\lim\limits_{x \to 0} \dfrac{\sin (3x)}{x}$

2) $\lim\limits_{x \to 0} \dfrac{\tan x}{x}$

3) $\lim\limits_{x \to \pi} \dfrac{\sin x}{x}$

4) $\lim\limits_{x \to 0} \dfrac{1 - \cos^2 x}{x}$

5) $f(x) = x^4 - 1.$ Find $\lim\limits_{\Delta x \to 0} \dfrac{f(x + \Delta x) - f(x)}{\Delta x}.$

Assignment:
Pg. 68
65 - 88