

Limits involving Trig fns

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9:42 AM

$$\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1 \quad \xrightarrow{\text{(As } x \rightarrow 0, \text{ } kx \rightarrow 0 \text{ also)}}} \lim_{x \rightarrow 0} \frac{\sin(kx)}{kx} = 1$$

$$\text{Ex } \lim_{x \rightarrow 0} \frac{\cos x}{x+1} = \frac{1}{1} = 1 \quad \lim_{x \rightarrow 0} \frac{3 \sin x}{x} = 3 \cdot 1 = 3$$

$$\lim_{x \rightarrow 0} \frac{\sin x}{3x} = \frac{1}{3} \cdot 1 = \frac{1}{3} \quad \lim_{x \rightarrow 0} \frac{3 \sin(3x)}{3x} = 3 \cdot 1 = 3$$

$$\lim_{x \rightarrow 0} \frac{5 \sin(5x)}{2x \cdot 5} = \frac{5}{2} \quad \lim_{x \rightarrow 0} \frac{\sin(3x)}{\sin(8x)} = \lim_{x \rightarrow 0} \frac{3x \frac{\sin(3x)}{3x}}{8x \frac{\sin(8x)}{8x}} = \frac{3}{8}$$

$$\lim_{x \rightarrow 0} \frac{\tan(2x)}{x} = \lim_{x \rightarrow 0} \frac{2 \frac{\sin(2x)}{2x}}{\cos(2x)} = 2$$

$$\left[\tan x = \frac{\sin x}{\cos x} \right]$$

p66-68 #24-28, 66 p76 #1, 2, 19, 20, 24 Classwork

p85 #27, 28 p95-96 #8, 9, 10, 13, 14, 40 HW