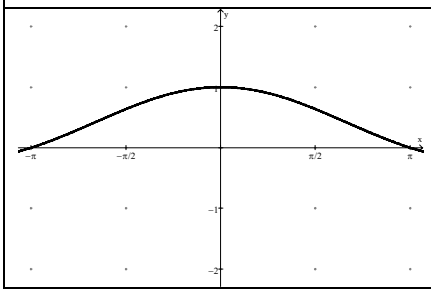
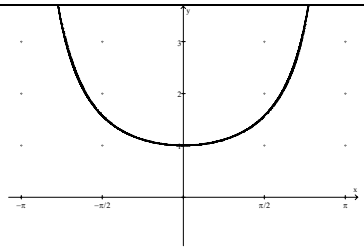
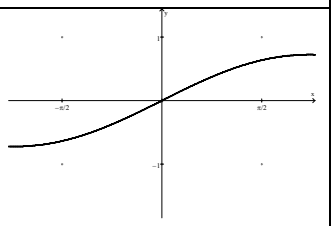
LIMITS NOTES
DAY #2

KNOW THE FOLLOWING THREE THEOREMS:

1. $\lim_{x\to 0}\frac{\sin\square}{\square}=1$	2. $\lim_{x\to 0}\frac{\square}{\sin\square}=1$	3. $\lim_{x\to 0}\frac{1-\cos\square}{\square}=0$
		

Examples:

1. $\lim_{x\to 0}\frac{\sin 3x}{x} \Rightarrow \lim_{x\to 0}\frac{\sin 3x}{x}\bullet\left[\frac{3}{3}\right] \Rightarrow \lim_{x\to 0}3\left[\frac{\sin 3x}{3x}\right]=\boxed{\boxed{3}}$
2. $\lim_{x\to 0}\frac{1-\cos 7x}{x} \Rightarrow \lim_{x\to 0}\frac{1-\cos 7x}{x}\bullet\left[\frac{7}{7}\right] \Rightarrow \lim_{x\to 0}7\left[\frac{1-\cos 7x}{7x}\right]=\boxed{\boxed{0}}$
3. $\lim_{x\to 0}\frac{\tan 2x}{x} \Rightarrow \lim_{x\to 0}\frac{\frac{\sin 2x}{\cos 2x}}{x} \Rightarrow \lim_{x\to 0}\frac{\sin 2x}{x\cos 2x} \Rightarrow \lim_{x\to 0}\frac{\sin 2x}{x\cos 2x}\bullet\left[\frac{2}{2}\right] \Rightarrow$ $\lim_{x\to 0}\frac{2}{\cos 2x}\left[\frac{\sin 2x}{2x}\right] \Rightarrow \lim_{x\to 0}\frac{2}{\cos 2x} \Rightarrow \lim_{x\to 0}\frac{2}{\cos 2(0)}=\boxed{\boxed{2}}$

Try These:

1. $\lim_{x\to 0}\frac{2x}{\sin 4x}$	2. $\lim_{x\to 0}\frac{5\sin 4x}{\sin 5x}$	3. $\lim_{x\to 0}\frac{\sin x}{x^2-2x}$
Answers: 1. $\frac{1}{2}$	2. 4	3. $\frac{-1}{2}$

Revised: 9/12/2008