PLEASE DO NOT WRITE ON THIS SHEET!

Sum Identities:

$$cos(x + y) = cosxcosy - sinxsiny$$

$$\sin(x + y) = \sin x \cos y + \cos x \sin y$$

$$\tan(x+y) = \frac{\tan x + \tan y}{1 - \tan x \tan y}$$

Difference Identities:

$$cos(x - y) = cosxcosy + sinxsiny$$

$$\sin(x - y) = \sin x \cos y - \cos x \sin y$$

$$\tan(x - y) = \frac{\tan x - \tan y}{1 + \tan x \tan y}$$

Cofunction Identities:

$$\sin\left(\frac{\pi}{2} - x\right) = \cos x$$

$$tan\left(\frac{\pi}{2}-x\right)=cotx$$

$$sec\left(\frac{\pi}{2}-x\right)=cscx$$

$$\cos\left(\frac{\pi}{2} - x\right) = \sin x$$

$$\cot\left(\frac{\pi}{2} - x\right) = \tan x$$

$$\csc\left(\frac{\pi}{2} - x\right) = \sec x$$

Double-Angle Identities:

$$sin(2x) = 2sinxcosx$$

$$cos(2x) = \begin{cases} cos^2x - sin^2x \\ 1 - 2sin^2x \\ 2cos^2x - 1 \end{cases} tan(2x) = \begin{cases} \frac{2tanx}{1 - tan^2x} \\ \frac{2cotx}{cot^2x - 1} \\ \frac{2}{cotx - tanx} \end{cases}$$

Half-Angle Identities:

$$sin\frac{x}{2} = \pm \sqrt{\frac{1-cosx}{2}}$$
 $cos\frac{x}{2} = \pm \sqrt{\frac{1+cosx}{2}}$

$$tan\frac{x}{2} = \pm \sqrt{\frac{1-cosx}{1+cosx}} = \frac{sinx}{1+cosx} = \frac{1-cosx}{sinx}$$

IDENTITY SHEET TEST # 4

PLEASE DO NOT WRITE ON THIS SHEET!

Product-Sum Identities:

$$sinxcosy = \frac{1}{2}[sin(x+y) + sin(x-y)]$$

$$cosxsiny = \frac{1}{2}[sin(x+y) - sin(x-y)]$$

$$sinxsiny = \frac{1}{2}[cos(x-y) - cos(x+y)]$$

$$cosxcosy = \frac{1}{2}[cos(x+y) + cos(x-y)]$$

Sum-Product Identities:

$$sinx + siny = 2sin\frac{x+y}{2}cos\frac{x-y}{2}$$

$$sinx - siny = 2cos\frac{x+y}{2}sin\frac{x-y}{2}$$

$$cosx + cosy = 2cos\frac{x+y}{2}cos\frac{x-y}{2}$$

$$cosx - cosy = -2sin\frac{x+y}{2}sin\frac{x-y}{2}$$