Turn in HW #2

- **5.2 #1-75odd**
- **5.3 #1-35odd; 37-48all; 61-68all**
- **5.4 #1-22 all;**
- **5.4 #33-67odd; 71-97odd**

Reciprocal Identities

$\csc x = \frac{1}{\sin x}$, $\sin x = \frac{1}{\csc x}$

$\sec x = \frac{1}{\cos x}$, $\cos x = \frac{1}{\sec x}$

$\cot x = \frac{1}{\tan x}$, $\tan x = \frac{1}{\cot x}$

Ratio Identities

$\tan x = \frac{\sin x}{\cos x}$, $\cot x = \frac{\cos x}{\sin x}$

Odd-Even Identities

$\cos(-x) = \cos x$, $\sin(-x) = -\sin x$, $\tan(-x) = -\tan x$

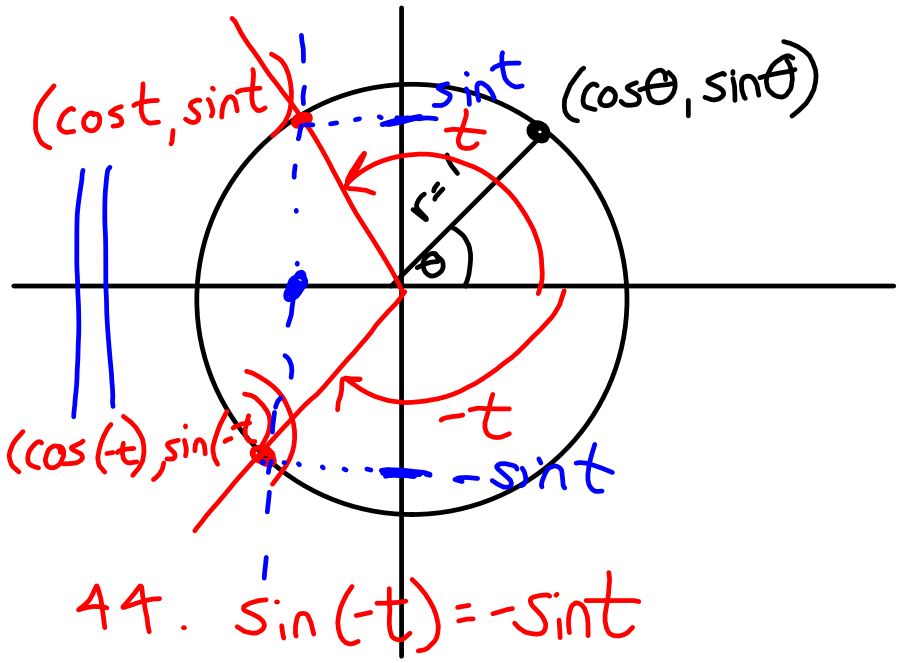
$\sec(-x) = \sec x$, $\csc(-x) = -\csc x$, $\cot(-x) = -\cot x$

Pythagorean Identities

$\sin^2 x + \cos^2 x = 1$

$1 + \cot^2 x = \csc^2 x$

$\tan^2 x + 1 = \sec^2 x$



Use the trigonometric identities to write each expression in terms of a single trigonometric function or constant.

$\sin^2 t + \cos^2 t = 1$

$\cos^2 t = 1 - \sin^2 t$

$(a-b)(a+b) = a^2 - b^2$

$a^2 + ab - ab - b^2$

60. $\frac{1}{1-\sin t} + \frac{1}{1+\sin t} = \frac{1}{(1-\sin t)} \cdot \frac{1+\sin t}{(1+\sin t)} + \frac{1}{(1+\sin t)} \cdot \frac{1-\sin t}{(1-\sin t)}$

$= \frac{1+\sin t + 1 - \sin t}{1-\sin^2 t} = \frac{2}{1-\sin^2 t} = \frac{2}{\cos^2 t}$

$= \frac{2}{\frac{1}{\sec^2 t}} = 2\sec^2 t$

64. $\cos^2 t\,(1 + \tan^2 t)$

$\frac{\sin^2 t + \cos^2 t = 1}{\cos^2 t}$

$\tan^2 t + 1 = \sec^2 t$

$= \cos^2 t \cdot \sec^2 t$

$= \cos^2 t \cdot \frac{1}{\cos^2 t} = \boxed{1}$

Perform the indicated operation and simplify.

$(a+b)^2 = a^2 + 2ab + b^2$

$(a+b)(a+b)$

78. $(\sin t + \cos t)^2$

$\sin^2 t + 2\sin t\cos t + \cos^2 t$

$\sin^2 t + \cos^2 t + 2\sin t\cos t$

$1 + 2\sin t\cos t = 1 + \sin 2t$

Factor the expression.

Let $x = \cos t$

86. $\cos^2 t + 3\cos t - 4$

$x^2 + 3x - 4$

$(x+4)(x-1)$

$(\cos t + 4)(\cos t - 1)$

81. $\dfrac{\sin t}{1+\cos t} + \dfrac{1+\cos t}{\sin t}$

$= \dfrac{\sin t}{1+\cos t} \cdot \dfrac{\sin t}{\sin t} + \dfrac{1+\cos t}{\sin t} \cdot \dfrac{1+\cos t}{1+\cos t}$

$= \dfrac{\sin^2 t + 1 + 2\cos t + \cos^2 t}{(1+\cos t)\sin t} = \dfrac{2+2\cos t}{(1+\cos t)\sin t}$

$= \dfrac{2(1+\cos t)}{(1+\cos t)\sin t} = \dfrac{2}{\sin t} = 2\csc t$

<u>Homework for Test #1</u>:

HW #1 - Submitted 8/15:

- 5.1 #1, 2, 7-18 all, 31-48 all, 55-74 all
- 4 angular speed problems on handout

HW #2 - Submitted 8/22:

- 5.2 #1-75odd
- 5.3 #1-35odd; 37-48all; 61-68all
- 5.4 #1-22 all;
- 5.4 #33-67odd; 71-97odd

Due Monday 8/25:

- Test #1 Practice Problems (handout)

Test #1 - Wednesday, 8/27

Quiz #2 - NOW!