# FROM YESTERDAY:

*Verify that each equation is an identity.* prove it !!

15. $\dfrac{1-\sin^2 x}{\cos x + \cos x \sin x} = \sec x - \tan x$ as is

$$\frac{(1+\sin x)(1-\sin x)}{(\cos x)(1+\sin x)} = \sec x - \tan x$$

$$\frac{1-\sin x}{\cos x} = \sec x - \tan x$$

$$\frac{1}{\cos x} - \frac{\sin x}{\cos x} = \sec x - \tan x$$

$$\sec x - \tan x = \sec x - \tan x \quad \checkmark$$

# FROM YESTERDAY:

*Simplify each expression. Clearly show all steps.*

11. $\dfrac{\left(\sec^2 x - 1\right)}{\left(\sec x + 1\right)}$

← Factor the difference of squares, then cancel like terms

$$\frac{(\sec x + 1)(\sec x - 1)}{(\sec x + 1)}$$

$$= \sec x - 1$$

**Notes: put on bright yellow paper!**

# Notes 7.1: Helpful Hints for Identities

*transform side that is more complicated

*substitute or rewrite using identities

*multiply by forms of 1 (such as $\frac{\sin x}{\sin x}$ )

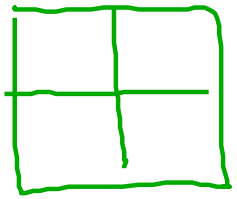
# Notes 7.1: Helpful Hints for Identities

*factor (GCF or difference of squares)

*multiply- use FOIL method for binomials

**F**irst **O**uter **I**nner **L**ast
(middle term)

or



*split apart fractions
(be sure to keep denominator intact!!)

# Notes 7.1: Helpful Hints for Identities

*get a common denominator and add or subtract

*convert terms to $\sin x$ and $\cos x$

*CANNOT "square" or "square root" both sides of equation when proving identities

4. $\dfrac{\sin x}{1+\cos x} + \dfrac{\sin x}{1-\cos x}$

**Get a common denominator!**

$\dfrac{\sin x\,(1-\cos x)}{(1+\cos x)(1-\cos x)} + \dfrac{\sin x\,(1+\cos x)}{(1-\cos x)(1+\cos x)}$

FOIL (multiply)

**Check #1-8:** *sinx* *cosx* *cscx* *$2\cos^2 x$* *2cscx* *2cosx* *3sinx* *1*

Verify that each equation is an identity (yes, all of them are identities.)

→Start with the "more complicated" side and rewrite/simplify until it matches the other side that stays "as is."

CLEARLY SHOW ALL STEPS!

9. $\dfrac{1+\tan^2 x}{\csc x \sec x} = \tan x$ (as is)

$\tan x = \tan x$ ✓

10. $\dfrac{\sin x + \cos x}{\sin x \cos x} = \sec x + \csc x$ (as is)

Verify that each equation is an identity (yes, all of them are identities.)

→Start with the "more complicated" side and rewrite/simplify until it matches the other side that stays "as is."

CLEARLY SHOW ALL STEPS!

as is

11. $\sin x \cdot \tan x = \sec x - \cos x$

12. $(\sin x - 1)(\tan x + \sec x) = -\cos x$ as is

$\sin x \tan x = \sin x \tan x$ ✓