

Lesson 13
Solving Trig equations
2/9/16
7.5

Warm-up
Write the Pythagorean identities?

Principal values are solutions that are restricted to certain quadrants.

For **Sine and Tangent** the restrictions are Q1 and QIV $-90^\circ \leq x \leq 90^\circ$

For **Cosine** the restrictions are QI and QII. $0^\circ \leq x \leq 180^\circ$

I Try:

Solve $\sin x \cos x - \frac{1}{2} \cos x = 0$ for principal values of x.

Simplify the expression	$\cos x \left(\sin x - \frac{1}{2} \right) = 0$	
Set each factor equal to 0.	$\cos x = 0$	$\sin x - \frac{1}{2} = 0$
Solve for x with quadrant restrictions	$x = 90^\circ$	$\sin x = \frac{1}{2}$ $x = 30^\circ$

When solving for all real values, it should be in the format

$x + 360^\circ k$ for sine and cosine

$x + 180^\circ k$ for tangent

I Try:

Solve for $\cos^2 x - \cos x + 1 = \sin^2 x$ for all real values

Simplify the expression <i>Use identities if possible to create like terms</i>	
Simplify	
Factor	
Solve for each factor	

We Try:

Solve for $4 \sin^2 x + 1 = -4 \sin x$ for all real values.

Simplify the expression <i>Use identities if possible to create like terms</i>	
Simplify	
Factor	
Solve for each factor	

You Try:

Solve for $2 \sec^2 x - \tan^4 x = -1$ for all real values.

Simplify the expression <i>Use identities if possible to create like terms</i>	
Simplify	
Factor	
Solve for each factor	