

§5.1: Fundamental Identities

“I WILL...

...use identities to evaluate and simplify trig functions”

I. Steps in Proving Identities

- A. Work at one side at a time
- B. Identify any opportunities to factor an expression, such as adding fractions, squaring a binomial, etc...
- C. Apply whatever sine and cosine functions are applicable
- D. Simplify the equation by using all applicable theorems and identities
- E. CANCEL, CANCEL, CANCEL
- F. At its conclusion, Make sure that  $A = A$
- G. Remember, there is MORE THAN ONE WAY to solve an equation

Ex 1: Use trigonometric identities to transform the left side of the equation into the right side  $\left(0, \frac{\pi}{2}\right)$  for  $\tan \theta \cos \theta = \sin \theta$

Ex 2: Use trigonometric identities to transform the left side of the equation into the right side  $\left(0, \frac{\pi}{2}\right)$  for  $\cos \theta \sec \theta = 1$

<p>Your Turn: Use trigonometric identities to transform the left side of the equation into the right side <math>\left(0, \frac{\pi}{2}\right)</math> for <math>\csc \theta \tan \theta = \sec \theta</math></p>	<p>Ex 3: Use trigonometric identities to prove <math>\left(0, \frac{\pi}{2}\right)</math> for <math>\cot^2 \theta \cdot \sin^2 \theta + \sin^2 \theta = 1</math></p>
<p>Ex 4: Use trigonometric identities to prove <math>\left(0, \frac{\pi}{2}\right)</math> for <math>(\csc \theta + \cot \theta)(\csc \theta - \cot \theta) = 1</math></p>	<p>Your Turn: Use trigonometric identities to prove <math>\left(0, \frac{\pi}{2}\right)</math> for <math>(\csc \theta + 1)(\csc \theta - 1) = \cot^2 \theta</math></p>