6.3 Proving an Identity:

To verify an identity, substitute a value for the variable on both sides of the equation; if the left hand side (LHS) is equal to the right hand side (RHS), then the identity is verified.

To prove an identity, manipulate one or both sides of the equation until they are the same.

Start by simplifying the more complicated side. **Do not cross the equal sign.**

Example 1:

Verify and Prove

a.) $(1 - \cos^2 x)(\csc x) = \sin x$

b.) $\dfrac{1-\cos x}{\sin x} = \dfrac{\tan x - \sin x}{\tan x \sin x}$

c.) $\dfrac{1}{1-\sin x} = \dfrac{1+\sin x}{\cos^2 x}$

d.) $\dfrac{1+\cos 2x}{\sin 2x} = \cot x$

e.) $\dfrac{\sin x + \tan x}{1+\cos x} = \dfrac{\sin 2x}{2\cos^2 x}$