Tonight's Class: 6.3 Proving Identities

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6.3 Proving Identities

- When we prove identities:
 - Step by step, use algebra and/or Basic Identities to change the way either the left- hand side (LHS) or the right-hand side (RHS) looks.
 - Think of the " " sign separating the LHS and RHS as a barrier. Don't take terms from one side of the equals sign to the other. ٠
 - · When the LHS and the RHS look exactly the same, the identity is proven.

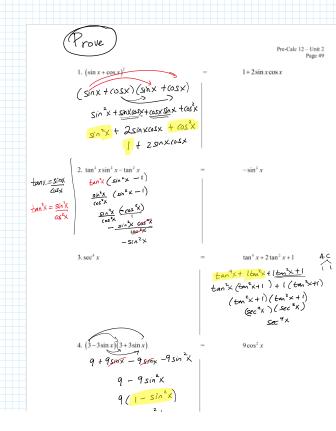
Strategies for Proofs

- · Write each step directly below the previous one.
- · Don't skip steps aim to be as CLEAR as possible.
- · See if there's any factoring you can do, especially GCF or difference of squares.
- · Don't cancel anything, unless you have identical factors on the top and bottom of an expression If rational expressions are added /subtracted together, get a common denominator so
 you can combine the expressions and simplify.
- · If possible, substitute known identities to simplify expressions.
- If the LHS and RHS look as below, where they are **dimost** reciprocals of each other, multiply one side, top and bottom, by the **conjugate**) of the binomial. Then use a Pythagorean identity to simplify further.

 $\frac{1+\sin y}{\cos y} \frac{1-shy}{(1-siny)}$ cos y $1 - \sin y$ 1 - stay + siny - sin2y cosy (1-sing) cosy (1-siny)

Try these strategies to prove the identities on the following pages.

cosy (089 (1- smy) Cor J 1-Sing



 $(5xy)^{2} ((x + 3)^{2} + (4 + 3)^{2})^{2} = 5^{2}x^{2}y^{2} + 5^{2}y^{2} + 5^{2}$

 $\sin^2\theta + \cos^2\theta = 0$ $\int h^2 \theta - 1 + \cos^2 \theta = 0$ $\sin^2\theta - 1 = -\cos^2\theta$

