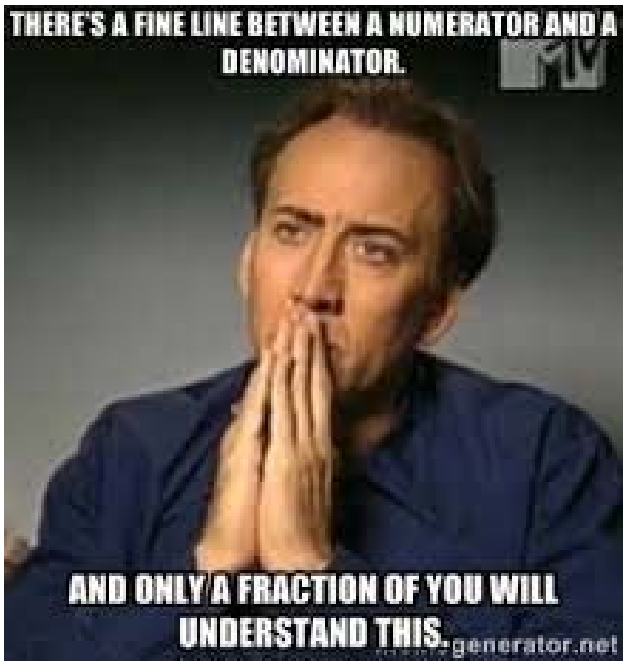
Thursday, February 23, 2017



Opener: #3, 4, 7, 8 on Yesterday's paper

5.2 - Proofs with Trig Identities

(30) $\dfrac{(\sec y - \tan y)(\sec y + \tan y)}{\sec y}$

$= \dfrac{\sec^2 y - \tan^2 y}{\sec y} = \dfrac{1}{\sec y} = \cos y$

(24) $\dfrac{1+\tan x}{1+\cot x} = \dfrac{\frac{\cos x}{\cos x} + \frac{\sin x}{\cos x}}{\frac{\sin x}{\sin x} + \frac{\cos x}{\sin x}} = \dfrac{\frac{\cos x + \sin x}{\cos x}}{\frac{\sin x + \cos x}{\sin x}} = \dfrac{\cos x + \sin x}{\cos x} \cdot \dfrac{\sin x}{\sin x + \cos x}$

$= \dfrac{\sin x}{\cos x} = \tan x$

(25) $(\sec^2 x + \csc^2 x) - (\tan^2 x + \cot^2 x)$

$\sec^2 x + \csc^2 x - \tan^2 x - \cot^2 x$

$\sec^2 x - \tan^2 x + \csc^2 x - \cot^2 x$

$1 + 1$

$= 2$

5.2 Proving Trig Identities

Proof: use Algebra and Identities to show that one side of an equation is equal to the other.

[usu. work on one side of equation →

[not like solving an equation.]

Example:

(1) $\tan x \cdot \frac{1}{\cot x} = \tan^2 x$

$\tan x \cdot \tan x =$

$\tan^2 x = \tan^2 x$ ✓

(2) $\frac{\sin x \csc x}{\sin x \cos x} - \frac{\cos x \cos x}{\cos x \sin x} = \tan x$

$\frac{\sin x \csc x - \cos^2 x}{\sin x \cdot \cos x} =$

$\frac{1 - \cos^2 x}{\sin x \cdot \cos x} =$

$\frac{\sin^2 x}{\sin x \cdot \cos x} =$

$\frac{\sin x}{\cos x} =$

$\tan x = \tan x$ ✓