Pi Day

Chapter 7

LT 3 - I can Verify Identities with Factoring

REMEMBER...

* factor
* Work with the more "complicated" side
* Use the other side to help you decide what to substitute in the "complicated" side
* Use Reciprocal, Quotient, Pythagorean Identities
* If stuck, change everything to sines & cosines

1.) $\sec^4 x - \sec^2 x = \tan^4 x + \tan^2 x$

$\sec^2 x(\sec^2 x - 1)$

$\sec^2 x(\tan^2 x)$

$(1 + \tan^2 x)(\tan^2 x)$

$\tan^2 x + \tan^4 x$

$\tan^4 x + \tan^2 x = \tan^4 x + \tan^2 x$

2.) $\sec^2 x - \sin^2 x - \cos^2 x = \tan^2 x$

$\sec^2 x - (1 - \cos^2 x) - \cos^2 x = \tan^2 x$

$\sec^2 x - 1 + \cancel{\cos^2 x} - \cancel{\cos^2 x} = \tan^2 x$

$\sec^2 x - 1 = \tan^2 x$

$\boxed{\tan^2 x = \tan^2 x}$

3.) $\csc^2 x + \cot^2 x = \csc^4 x - \cot^4 x$

$x^2 - 9$

$(x+3)(x-3)$

$(\csc^2 x - \cot^2 x)(\csc^2 x + \cot^2 x)$

$(1)(\csc^2 x + \cot^2 x)$

$\csc^2 x + \cot^2 x = \csc^2 x + \cot^2 x$

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

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

$\dfrac{(\sin x + 1)(\sin x + 1)}{1 - \sin^2 x} = \dfrac{1+\sin x}{1-\sin x}$

$\dfrac{\cancel{(\sin x + 1)}(\sin x + 1)}{\cancel{(1+\sin x)}(1-\sin x)}$

$\checkmark \quad \dfrac{1+\sin x}{1-\sin x} = \dfrac{1+\sin x}{1-\sin x}$