College Algebra

Unit 7 – LT 1-3 Review

Name: _____

Date: _____ **Period:** _____

Verify the following identities.

1.) $(\sin^2\theta+\cos^2\theta)^3=1$

$(1)^3=1$

$1=1$

✓

2.) $(\sin x+\cos x)^2=1+2\sin x\cos x$

$(\sin x+\cos x)(\sin x+\cos x)$

$\sin^2+2\sin x\cos x+\cos^2 x$

$1+2\sin x\cos x$

$=1+2\sin x\cos x$

✓

3.) $\dfrac{\sec^2 x-1}{\sec^2 x}=\sin^2 x$

$\dfrac{\tan^2 x}{\sec^2 x}=\sin^2 x$

$\tan^2 x\cdot\dfrac{1}{\sec^2 x}=\sin^2 x$

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

$\sin^2 x=\sin^2 x$

✓

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

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

$\tan^4 x=\tan^2 x(\tan^2 x)$

$\tan^4 x=\tan^4 x$

✓

Verify the following identities.

5.) $\tan^2 x + 5 = \sec^2 x + 4$

$(\sec^2 x - 1) + 5 = \sec^2 x + 4$

$\sec^2 x - 1 + 5 = \sec^2 x + 4$

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

✓

6.) $\dfrac{\tan x \cot x}{\cos x} = \sec x$

$\tan x \cdot \cot x \cdot \dfrac{1}{\cos x} = \sec x$

$\dfrac{\sin x}{\cos x} \cdot \dfrac{\cos x}{\sin x} \cdot \dfrac{1}{\cos x} = \sec x$

$\dfrac{1}{\cos x} = \sec x$

$\sec x = \sec x$

✓

7.) $\csc^4 x - \cot^4 x = 2\csc^2 x - 1$

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

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

$\csc^2 x + \cot^2 x = 2\csc^2 x - 1$

$\csc^2 x + (\csc^2 x - 1) = 2\csc^2 x - 1$

$2\csc^2 x - 1 = 2\csc^2 x - 1$

✓

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

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

$1 - \cos^2 x = \sin^2 x$

$\sin^2 x = \sin^2 x$

✓