Key

U7L1 More Practice B Verifying Trigonometric Identities

Name_____

Verify each identity.

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

monomial

$\frac{\tan x}{\sin^2 x} - \frac{\sin x \cos x}{\sin^2 x}$

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

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

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

2. $\csc\theta - \cot\theta = \left(\frac{\sin\theta}{1+\cos\theta} \cdot \frac{1-\cos\theta}{1-\cos\theta}\right)$

$= \frac{\sin(1-\cos\theta)}{1-\cos^2\theta}$

$= \frac{\sin(1-\cos\theta)}{\sin^2\theta}$

$= \frac{1-\cos\theta}{\sin\theta}$

$= \frac{1}{\sin\theta} - \frac{\cos\theta}{\sin\theta}$

$= \csc\theta - \cot\theta$ ✓

3. $\frac{\sec x}{\tan x} = \frac{\tan x}{\sec x - \cos x}$

$=$

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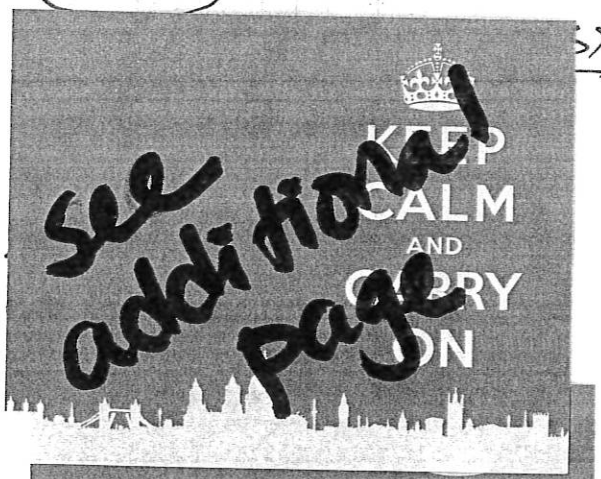

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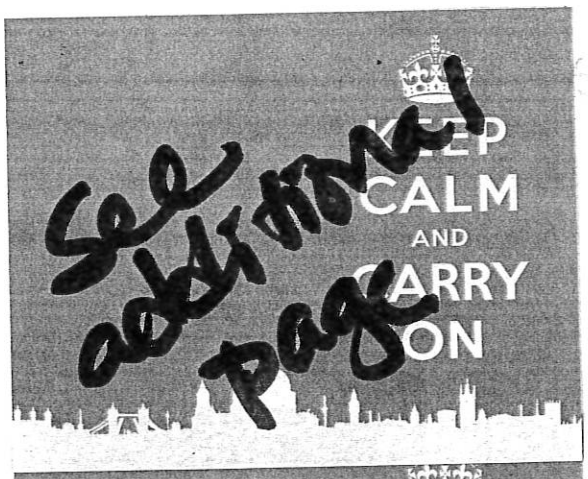
4. $\frac{\cot\theta - 1}{\cot\theta + 1} = \frac{1-\tan\theta}{1+\tan\theta}$



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$=$

$=$

#3.

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

Practice B #3

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

$$= \frac{1}{\sin x}$$

$$= \frac{1}{\cos x} \div \frac{\sin x}{\cos x}$$

$$= \sec x \div \tan x$$

$$= \frac{\sec x}{\tan x}$$

Practice B #4

#4 $\boxed{\dfrac{\cot\theta - 1}{\cot\theta + 1}} = \dfrac{1-\tan\theta}{1+\tan\theta}$

$$\left[\frac{1}{\tan\theta} - \frac{\tan\theta}{\tan\theta}\right] \div \left[\frac{1}{\tan\theta} + \frac{\tan\theta}{\tan\theta}\right]$$

$$\left[\frac{1-\tan\theta}{\tan\theta}\right] \cdot \left[\frac{\tan\theta}{1+\tan\theta}\right]$$

$$\frac{1-\tan\theta}{\tan\theta} = \frac{1-\tan\theta}{1+\tan\theta}$$

☺

5. $\frac{1}{1-\cos x}+\frac{1}{1+\cos x}=2\csc^2 x$

$\frac{1+\cos x}{1+\cos x}\left(\frac{1}{1-\cos x}\right)+\left(\frac{1}{1+\cos x}\right)\frac{1-\cos x}{1-\cos x}$

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

$\frac{2}{\sin^2 x}$

$2\csc^2 x = \checkmark$

6. $\frac{1-\sin x}{\cos x}+\frac{\cos x}{1-\sin x}=2\sec x$

$\frac{1-\sin x}{1-\sin x}\left(\frac{1-\sin x}{\cos x}\right)+\frac{\cos x}{1-\sin x}\left(\frac{\cos x}{\cos x}\right)$

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

$\frac{2-2\sin x}{\cos x(1-\sin x)}$

$\frac{2(1-\sin x)}{\cos x(1-\sin x)}$

$2\sec x = \checkmark 2\sec x$

7. $\sec^4\theta-\sec^2\theta=\tan^4\theta+\tan^2\theta$

$\sec^2(\sec^2\theta-1)=$

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

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

$\tan^4\theta+\tan^2\theta = \checkmark$

8. $\frac{\cos^2\beta-1}{\cos^2\beta-\cos\beta}=1+\sec\beta$

$\frac{(\cos B+1)(\cos B-1)}{\cos B(\cos B-1)}=$

$\frac{\cos B}{\cos B}+\frac{1}{\cos B}$

$1+\sec B = \checkmark$