Do Now: From section 7.1 of yesterday's

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

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

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

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

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

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

85. $\dfrac{1+\sin x}{1-\sin x} = (\tan x + \sec x)^2$

$\tan^2x+2\tan x\sec x+\sec^2x$

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

$\dfrac{\sin^2x}{\cos^2x} + \dfrac{2\sin x}{\cos^2x} + \dfrac{1}{\cos^2x}$

$\dfrac{\sin^2x+2\sin x+1}{\cos^2x}$

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

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

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

OR

$(1+\sin x)$ $(1+\sin x)$

85. $\dfrac{1+\sin x}{1-\sin x} = (\tan x + \sec x)^2$

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

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

$\left(\dfrac{1+\sin x}{\cos x}\right)^2$

$\left(\dfrac{1}{\cos x}+\dfrac{\sin x}{\cos x}\right)^2$

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

88. $(\sin\alpha - \tan\alpha)(\cos\alpha - \cot\alpha) = (\cos\alpha - 1)(\sin\alpha - 1)$

$\sin\alpha\cos\alpha - \tan\alpha\cos\alpha - \sin\alpha\cot\alpha + 1$

$\sin\alpha\cos\alpha - \frac{\sin\alpha}{\cos\alpha}\cdot\cos\alpha - \sin\alpha\cdot\frac{\cos\alpha}{\sin\alpha} + 1$

$\sin\alpha\cos\alpha - \sin\alpha - \cos\alpha + 1$

$\sin\alpha(\cos\alpha - 1) - 1(\cos\alpha - 1)$

$(\sin\alpha - 1)(\cos\alpha - 1) = (\cos\alpha - 1)(\sin\alpha - 1)$

OR

88. $(\sin\alpha - \tan\alpha)(\cos\alpha - \cot\alpha) = (\cos\alpha - 1)(\sin\alpha - 1)$

$\left(\sin\alpha - \frac{\sin\alpha}{\cos\alpha}\right)\left(\cos\alpha - \frac{\cos\alpha}{\sin\alpha}\right)$

$\left(\frac{\sin\alpha\cos\alpha - \sin\alpha}{\cos\alpha}\right)\left(\frac{\cos\alpha\sin\alpha - \cos\alpha}{\sin\alpha}\right)$

$\frac{\sin\alpha(\cos\alpha - 1)}{\cos\alpha}\cdot\frac{\cos\alpha(\sin\alpha - 1)}{\sin\alpha}$

$(\cos\alpha - 1)(\sin\alpha - 1) = (\cos\alpha - 1)(\sin\alpha - 1)$

Work on #s 43, 47, 55, 56, 57, 67, 68, 81, 82, 84, 86 and 87

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26. $\dfrac{\tan x}{\sec x} = \dfrac{\sin x}{\cos x} \cdot \cos x = \sin x$

28. $\dfrac{\cot x \sec x}{\csc x} = \dfrac{\cos x}{\sin x} \cdot \dfrac{1}{\cos x} \cdot \sin x = 1$

30. $\dfrac{\cos v}{\sec v \sin v} = \cos v \cdot \dfrac{\cos v}{\sin v} = \dfrac{1 - \sin^2 v}{\sin v} = \csc v - \sin v$

35. $\tan \theta + \cot \theta = \dfrac{\sin \theta}{\cos \theta} + \dfrac{\cos \theta}{\sin \theta} = \dfrac{\sin^2 \theta + \cos^2 \theta}{\cos \theta \sin \theta} = \dfrac{1}{\cos \theta \sin \theta} = \sec \theta \csc \theta$

37. $(1 - \cos \beta)(1 + \cos \beta) = 1 - \cos^2 \beta = \sin^2 \beta = \dfrac{1}{\csc^2 \beta}$

38. $\dfrac{\cos x}{\sec x} + \dfrac{\sin x}{\csc x} = \cos^2 x + \sin^2 x = 1$