Do Now: #s 7 and 10 from Exercise Set B in Friday's packet

7. $\dfrac{1}{\tan x - \cot x} = \dfrac{\sin x \cos x}{2\sin^2 x - 1}$

$$\frac{1}{\frac{\sin x}{\cos x} - \frac{\cos x}{\sin x}} \qquad \frac{\cos x \sin x}{\cos x \sin x}$$

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

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

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

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

10. $1 + \dfrac{1}{\cos x} = \dfrac{\tan^2 x}{\sec x - 1}$

$\frac{\cos x}{\cos x}$ $\frac{1}{1}$

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

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

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

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

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

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

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

$$1 + \frac{1}{\cos x} = \frac{1}{\cos x} + 1$$

Continuing in Exercise Set B …

9. $\frac{\sin x}{1+\cos x}+\frac{1+\cos x}{\sin x}=2\cot x\sec x$

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

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

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

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

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

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

12. $2\cos^2 x-1=\frac{1-\tan^2 x}{1+\tan^2 x}$

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

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

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

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

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

$\cos^2 x-1+\cos^2 x$

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

13. $\frac{\cos x}{\tan x}=\csc x(1-\sin^2 x)$

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

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

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

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

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

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

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

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

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

$\cot x\cdot\cos x$

Homework 03-15

3. $(\sin A + 1)(\csc A - 1) = \cos A \cot A$

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

$1 + \frac{1}{\sin A} - \sin A - 1$

$\frac{1}{\sin A} - \sin A$

$\frac{1 - \sin^2 A}{\sin A}$

$\frac{\cos^2 A}{\sin A}$

$\cos A \cdot \frac{\cos A}{\sin A}$

$= \frac{\cos^2 A}{\sin A}$

4. $(1 + \csc\theta)(1 - \sin\theta) = \cot\theta \cos\theta$

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

$1 + \frac{1}{\sin\theta} - \sin\theta - 1$

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

$\frac{1 - \sin^2\theta}{\sin\theta}$

$\frac{\cos^2\theta}{\sin\theta}$

$\frac{\cos\theta}{\sin\theta} \cdot \cos\theta$

$= \frac{\cos^2\theta}{\sin\theta}$

8. $\frac{\cos\theta + \cot\theta}{\cos\theta \cot\theta} = \tan\theta + \sec\theta$

$\frac{\cos\theta + \frac{\cos\theta}{\sin\theta}}{\cos\theta \cdot \frac{\cos\theta}{\sin\theta}}$

$\frac{\sin\theta\cos\theta + \frac{\cos\theta}{\sin\theta}\sin\theta}{\sin\theta \cdot \frac{\cos^2\theta}{\sin\theta}}$

$\frac{\sin\theta\cos\theta + \cos\theta}{\cos^2\theta}$

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

$\frac{\sin\theta + 1}{\cos\theta}$

$\frac{\sin\theta}{\cos\theta} + \frac{1}{\cos\theta}$

$\tan\theta + \sec\theta = \tan\theta + \sec\theta$

Pythagorean Identity

Pythagorean Identity

11. $\frac{1 + \tan^2\theta}{1 - \cos^2\theta} = \sec^2\theta \csc^2\theta$

$\frac{\sec^2\theta}{\sin^2\theta}$

$\sec^2\theta \cdot \frac{1}{\sin^2\theta}$

$\sec^2\theta \csc^2\theta = \sec^2\theta \csc^2\theta$

14. $\frac{\cos\theta\sin\theta + \cos\theta}{\cos^2\theta} = \tan\theta + \sec\theta$

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

$\frac{\sin\theta + 1}{\cos\theta}$

$\frac{\sin\theta}{\cos\theta} + \frac{1}{\cos\theta}$

$\tan\theta + \sec\theta = \tan\theta + \sec\theta$