Tonight's HW: Worksheet 8.2

Adv. Alg.-Trig.
Homework #8.1

1) $\tan^2\theta$ 2) $\cot^2\theta$ 3) $\cot\theta$ 4) $\cos\theta$

5) $\sec\theta$ 6) $\cos\theta$ 7) $\cos^2 A$ 8) $\dfrac{1}{\cos^2 C}$

9) $\dfrac{\sin R+\cos R}{\sin R\cos R}$ 10) $\dfrac{\sin\theta\cos\theta-1}{\sin\theta}$

4. $\dfrac{\sin\theta}{\tan} = (\cos\theta)$

$\dfrac{\sin\theta}{\left(\frac{\sin\theta}{\cos\theta}\right)} = \dfrac{\sin\theta}{1}\cdot\dfrac{\cos\theta}{\sin\theta} = \cos\theta$

5. $\tan\theta\cdot\csc\theta$

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

9. $\sec R + \csc R$

$\sin\theta\cdot\dfrac{1}{\sin\theta}\cdot\dfrac{1}{\cos\theta} + \dfrac{1}{\sin\theta}\cdot\dfrac{\cos\theta}{\cos\theta}$

$\dfrac{\sin\theta+\cos\theta}{\sin\theta\cos\theta}$

Warm-Up

Simplify.

1) $(\sin\theta - \cos\theta)^2$ → $\sin^2\theta - 2\sin\theta\cos\theta + \cos^2\theta$

$1 - 2\sin\theta\cos\theta$

2) $\dfrac{1-\sin^2\theta}{\cot^2\theta} = \dfrac{\cos^2\theta}{1} \cdot \dfrac{\sin^2\theta}{\cos^2\theta}$

$= \sin^2\theta$

3) $\dfrac{\cot x}{\cos x}$

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

$\sin^2\theta + \cos^2\theta = 1$

$-\sin^2\theta \quad -\sin^2\theta$

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

Quiz Yourself:

1. $\sin^2\theta + \_\_\_ = 1$
2. $\sin^2\theta = \_\_ - \_\_\_\_$
3. $\cos^2\theta = \_\_ - \_\_\_\_$
4. $\_\_\_ + 1 = \sec^2\theta$
5. $\_\_\_ + 1 = \csc^2\theta$

Proving Identities

- Do not move terms from one side of the equation to the other.
- You may use identities on one (or) both sides of the equation.
- In general, start with the more complex side of the equation.
- Usually, put in terms of sin / cos.

1) $TanxCscx = Secx$

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

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

✓

2) $Cos^2x = CscxSinx - Sin^2x$

$1-\sin^2x \stackrel{?}{=} \frac{1}{\sin x}\cdot\frac{\sin x}{1} - \sin^2x$

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

✓

Pythid.

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

$-\sin^2x \qquad -\sin^2x$

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

3) $Tan^2x + Sin^2x + Cos^2x = Sec^2x$

$\frac{Sin^2x}{Cos^2x} \quad \underbrace{Sin^2x + Cos^2x}_{=1} = \frac{1}{Cos^2x}$

$\frac{Sin^2x}{Cos^2x} + \frac{Cos^2x}{Cos^2x} = \frac{1}{Cos^2x}$

$\frac{\overbrace{Sin^2x + Cos^2x}^{=1}}{Cos^2x} = \frac{1}{Cos^2x}$

$\frac{1}{Cos^2x} = \frac{1}{Cos^2x}$ ✓

4) $(Sinx + Cosx)^2 = 1 + 2SinxCosx$

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

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

$=1$

$1+2\sin x\cos x$

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

5) $Tan^2A(1+Cot^2A)=Sec^2A$

$\frac{Sin^2A}{Cos^2A}(Csc^2A)=$

$\frac{Sin^2A}{Cos^2A}\left(\frac{1}{Sin^2A}\right)$

$\frac{1}{Cos^2A}=\frac{1}{Cos^2A}$ ✓

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Wed: Quiz