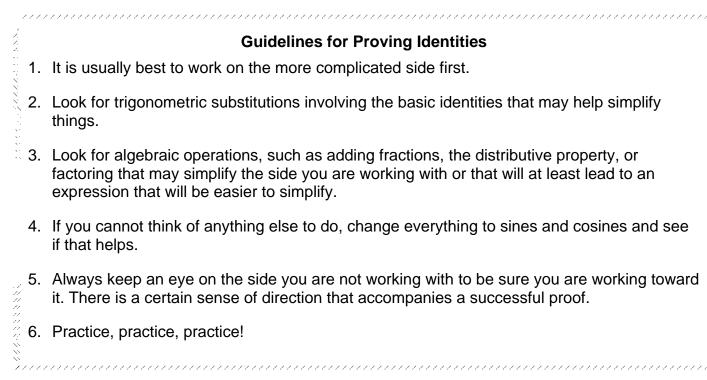
## Unit 6 (Chapter 5): Analytic Trigonometry

## DATE: \_\_\_\_ Pre-Calculus

# **5.2 Proving Trigonometric Identities**

Target 5B: Prove trigonometric identities



#### Prove the identity.

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

$$Sin \times (\cot x + \cos x + \tan x) = Sin \times \left(\frac{\cos x}{\sin x} + \cos x \cdot \frac{\sin x}{\cos x}\right)$$
$$= Sin \times \left(\frac{\cos x}{\sin x} + \sin x\right) \qquad \text{``Distribute''}$$
$$= Sin \times \cdot \frac{\cos x}{\sin x} + \sin^2 x$$
$$= Sin \times \cdot \frac{\cos x}{\sin x} + \sin^2 x$$

· · , Smx ( cot x + cosx tanx) = cusx + sin 2x.

3. 
$$\frac{\sec^{2}\beta n}{\sin\beta} = \frac{\sin\beta}{1-\sin\beta\beta}$$
Proof:  

$$\frac{5e^{-2}\beta - 1}{\sin\beta} = -\frac{4\cos^{2}\beta}{\sin\beta}$$

$$= \frac{5i\pi^{2}\beta}{(\cos^{2}\beta)}$$

$$= \frac{5i\pi^{2}\beta}{(\cos^{2}\beta)} + \frac{1}{53\pi^{2}\beta}$$

$$= \frac{5i\pi^{2}\beta}{(\cos^{2}\beta)}$$

$$= \frac{5i\pi^{2}\beta}{(\cos^{2}\beta)}$$

$$= \frac{5i\pi^{2}\beta}{(-5\pi^{2}\beta)}$$

$$\frac{4.\frac{\sin\alpha}{1+\cos\alpha} + \frac{1+\cos\alpha}{5i\pi^{2}}}{(+\cos\beta)} + \frac{5i\pi^{2}}{(1+\cos\alpha)} + \frac{(1+\cos\alpha)}{(1+\cos\alpha)} + \frac{(1+\cos\alpha)}{(1+\cos\alpha)}$$

$$= \frac{5i\pi^{2}\alpha + 1 + 2\cos\beta}{5i\pi\alpha} + \frac{1+\cos\beta}{5i\pi\alpha}$$

$$= \frac{5i\pi^{2}\alpha + 1 + 2\cos\beta}{5i\pi\alpha} + \frac{1+\cos\beta}{5i\pi\alpha}$$

$$= \frac{1+1+2\cos\beta}{5i\pi\alpha} + \frac{1+2\cos\beta}{5i\pi\alpha}$$

$$= \frac{2(1+2\cos\beta)}{5i\pi\alpha}$$

$$= \frac{2(1+2\cos\beta)}{5i\pi\alpha}$$

$$= \frac{2(1+2\cos\beta)}{5i\pi\alpha}$$

# **More Practice**

Proving Trig Identities http://www.intmath.com/analytic-trigonometry/1-trigonometric-identities.php http://www.vitutor.com/geometry/trigonometry/identities\_problems.html https://www.youtube.com/watch?v=QGk8sYck\_ZI https://www.youtube.com/watch?v=ep5vjIY5kqE https://www.youtube.com/watch?v=IE8q4WRubC4

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