Integrated Math 3
Unit 4: Trig. Representations and Modeling
4.12

Name: _____

Date:_____ Period:_____

Objective: To verify trigonometric identities.

There is no single "right way" to verify trigonometric identities. There are ways that take fewer steps, but any method that is valid algebraically will work. There is no "answer", your work is the answer! You need to show each step, line by line, with only one move in each step. Do not skip steps!!!

CAUTION: You are only allowed to work on one side of the equation!!!

TIP: It's often easier to pick the more complicated looking side and rewrite everything in terms of sine and cosine.

Examples: For each example, verify the trigonometric identities.

a. $\cos\theta \tan\theta = \sin\theta$

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

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

$\sin\theta = \sin\theta$ ✓

b. $\cot\theta * \tan\theta + \sin\theta * \sec\theta = 1 + \tan\theta$

$\frac{\cos\theta}{\sin\theta} \cdot \frac{\sin\theta}{\cos\theta} + \frac{\sin\theta}{1} \cdot \frac{1}{\cos\theta} = 1 + \tan\theta$

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

$1 + \tan\theta = 1 + \tan\theta$ ✓

c. $\sin\theta \cos\theta \cot\theta + \sin^2\theta = 1$

$\frac{\sin\theta}{1} \cdot \frac{\cos\theta}{1} \cdot \frac{\cos\theta}{\sin\theta} + \sin^2\theta = 1$

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

$1 = 1$ ✓

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

$\frac{\cos\theta \cdot \sin\theta + \cos\theta}{\cos\theta \cdot \cos\theta} = \tan\theta + \sec\theta$

$\frac{\cos\theta \cdot \sin\theta}{\cos\theta \cdot \cos\theta} + \frac{\cos\theta}{\cos\theta \cdot \cos\theta} = \tan\theta + \sec\theta$

$\frac{\sin\theta}{\cos\theta} + \frac{1}{\cos\theta} = \tan\theta + \sec\theta$

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