

## Unit #3: Trigonometry

Topic: Trigonometry Review

Objective: *SWBAT solve various problems using trigonometry.***NO CALCULATOR***Directions: Read each question carefully and show all work.*

1) Determine the value of each of the following:

a)  $\cos\left(-\frac{5\pi}{4}\right)$

b)  $\csc\left(\frac{2\pi}{3}\right)$

c)  $\sin\left(\frac{7\pi}{6}\right)$

d)  $\tan\left(-\frac{5\pi}{3}\right)$

2) What are the coordinates on the unit circle for each of the following angles?

a)  $\frac{4\pi}{3}$

b)  $\frac{7\pi}{4}$

c)  $-\frac{5\pi}{6}$

d)  $\frac{11\pi}{4}$

3) If an angle intersects the unit circle at the point  $\left(-\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$ , what is the value for the sine and cosine of the angle? What could be the measure of the angle?

4) Simplify each of the following expressions for the given angle.

a)  $2\sin x \sec x (1 - 6\tan^2 x)$ ;  $x = \frac{2\pi}{3}$

b)  $\frac{\tan t - \tan t \sin^2 t}{2\sin t \cos t}$ ;  $t = -\frac{3\pi}{4}$

c)  $\frac{\sec^2 t - 2\cos^2 t}{3\cos t - \sin t}$ ;  $t = \frac{13\pi}{6}$

5) Simplify each of the following:

a)  $\frac{\sec x}{\sin x} - \frac{\sin x}{\cos x}$

$$b) \frac{\sin x - \sin^3 x}{\cos^3 x \sin^3 x}$$

6) Prove each of the following:

$$a) \frac{1 - \sec^2 x}{\sec^2 x - 1} = \cot^2 x - \csc^2 x$$

$$b) \frac{\tan \theta \csc^2 \theta}{1 + \tan^2 \theta} = \cot \theta$$

7) Solve each of the following equations for  $x$ , where  $0 \leq x \leq 2\pi$ :

a)  $5\sqrt{3} - 10\sin x = 0$

b)  $3\sec^2 x - 1 = 5$

c)  $\tan x \cot x + \tan x = 0$

d)  $\csc^2 x - \csc x = 2$

e)  $2\cos^2 x + \cos x - 1 = 0$

f)  $5\sin^2 x - 3\sin x + 1 = \cos^2 x$

