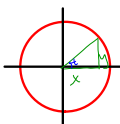


WARM UP

(1) On the unit circle, $\sin(t)$ equals what coordinate? What about $\cos(t)$?

(2) Write the equation of the unit circle using the Pythagorean Theorem:



$\cos^2(t) + \sin^2(t) = 1$

Substitute what you wrote for Part (1) into Part (2).

Oct 21-8:46 AM

Chapter 5 :: Analytic Trigonometry

Before\ basic definitions
 properties
 graphs
 applications

After\ evaluate
 simplify
 develop
 solve

Oct 21-8:53 AM

Basic Pythagorean Identity (Big Man on Campus):

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

To derive other versions,

1) Divide Basic Pythagorean Identity by $\cos^2\theta$:

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

$$1 + \tan^2\theta = \sec^2\theta$$

2) Divide Basic Pythagorean Identity by $\sin^2\theta$:

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

$$\cot^2\theta + 1 = \csc^2\theta$$

****Know how to solve for any term in any version of the Pythagorean Identity.**
 KNOW p. 352

Oct 13-8:16 AM

2 PARTS TODAY:

(1) Use trig identities to evaluate a function

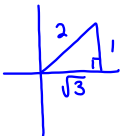
(2) Use trig identities to simplify expressions

Oct 21-9:02 AM

Part 1: Use trig identities to solve for the remaining trig functions.

Given: $\csc \theta = 2$ and $\tan \theta = \frac{\sqrt{3}}{3}$

$\sin \theta = \frac{1}{2}$



$\cos \theta = \frac{\sqrt{3}}{2}$
 $\cot \theta = \frac{\sqrt{3}}{1}$
 $\sec \theta = \frac{2}{1}$

p. 357, #1 & #11 (HW)

Oct 13-9:48 AM

Part 2: Simplify the following trig expressions.

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

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

2) $\cos^2 x (\sec^2 x - 1) = \cos^2 x (\frac{1}{\cos^2 x} - 1) = \frac{\cos^2 x}{\cos^2 x} - \cos^2 x = 1 - \cos^2 x = \sin^2 x$
 Check with calculator

3) $\sin \theta (\csc \theta - \sin \theta) = \sin \theta (\frac{1}{\sin \theta} - \sin \theta) = 1 - \sin^2 \theta = \cos^2 \theta$

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

p. 357: #21, 23 (HW)

Oct 13-9:51 AM

Some useful strategies...

- ★ Pythagorean Identities when you see squares
- ★ Reciprocal Identities
- ★ Quotient Identities

Oct 21-9:07 AM

HOMEWORK
 ...make trig work for you

5.1a (p. 357): *1-35 (1, 3, 5's), 115-118 (all)

*Omit 23

Oct 21-9:07 AM