Daily Agenda

Learning Target: I can use the properties of trig functions to transform an expression.

Homework
8.6 Day 1 WS

Assessment
8.6 Quiz - 3/7

Nothing is impossible. The word itself says, "I'm possible".
-Audrey Hepburn

Nov 15-8:24 PM

Feb 27-9:08 AM

8.6 Properties of Trig Functions

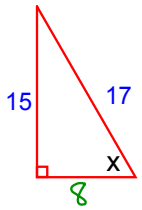
Using the diagram below, calculate the following:

$\sin x = \frac{15}{17}$

$\cos x = \frac{8}{17}$

$\tan x = \frac{15}{8}$

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



Mar 16-8:46 AM

8.6 Properties of Trig Functions

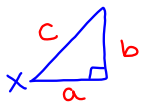
Is it always true that $\sin^2 x+\cos^2 x=1$? yes

How could you prove it?

$\left(\frac{a}{c}\right)^2+\left(\frac{b}{c}\right)^2$

$\frac{a^2}{c^2}+\frac{b^2}{c^2}=\frac{c^2}{c^2}$

$\frac{a^2+b^2}{c^2}=\frac{c^2}{c^2}$ ← Pythagorean Theorem



Mar 16-8:49 AM

Pythagorean

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

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

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

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

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

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

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

Mar 15-9:06 AM

Reciprocals

$\cot x=1/\tan x$
$\sec x=1/\cos x$
$\csc x=1/\sin x$

$(\cot x)(\tan x)=1$
$(\sec x)(\cos x)=1$
$(\csc x)(\sin x)=1$

Mar 15-9:06 AM

Quotients

$\tan x = \frac{\sin x}{\cos x}$ $\tan x = \frac{\sec x}{\csc x}$

$\cot x = \frac{\cos x}{\sin x}$ $\cot x = \frac{\csc x}{\sec x}$

Mar 15-9:06 AM

Examples

Transform the left side into the right side.

$$\csc x \tan x = \sec x$$

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

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

$\sec x = \sec x$

Mar 15-11:33 AM

Examples

Transform the left side into the right side.

$$\tan x + \cot x = \csc x \sec x$$

$\frac{\sin x}{\sin x}\frac{\sin x}{\cos x} + \frac{\cos x}{\sin x}\frac{\cos x}{\cos x} =$

$\frac{\sin^2 x + \cos^2 x}{\sin x \cos x} =$

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

$\csc x \sec x = \csc x \sec x$

Mar 15-11:33 AM

Examples

Transform the left side into the right side.

$$\frac{1 + \cot^2 x}{\sec^2 x} = \cot^2 x$$

$\frac{\csc^2 x}{\sec^2 x} =$

$\frac{\frac{1}{\sin^2 x}}{\frac{1}{\cos^2 x}} =$

$\frac{1}{\sin^2 x} \cdot \frac{\cos^2 x}{1}$

$\cot^2 x = \cot^2 x$

Mar 15-11:33 AM

Examples

Transform the left side into the right side.

$$\frac{1}{\sec x - \tan x} + \frac{1}{\sec x + \tan x} = 2\sec x$$

$\frac{\sec x + \tan x}{(\sec x + \tan x)} \cdot \frac{1}{(\sec x - \tan x)} + \frac{1}{(\sec x + \tan x)} \cdot \frac{(\sec x - \tan x)}{(\sec x - \tan x)}$

$\frac{\sec x + \tan x + \sec x - \tan x}{(\sec x - \tan x)(\sec x + \tan x)} =$

$\frac{2\sec x}{\sec^2 x - \tan^2 x} =$

$2\sec x = 2\sec x$

Mar 15-11:33 AM