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Unit 6 (Chapter 5): Analytic Trigonometry **Pre-Calculus**

5.1 Fundamental Trig Identities

Target 6A: Verify, evaluate, and apply trigonometric identities and formulas

Review of Prior Concepts

If $\sin\theta = 0.57$, then $\sin(\pi - \theta) =$?

Reciprocal Identities	
$\sin\theta = \frac{1}{\_\_\_\_}$	$\csc\theta = \frac{1}{\_\_\_\_}$
$\cos\theta = \frac{1}{\_\_\_\_}$	$\sec\theta = \frac{1}{\_\_\_\_}$
$\tan\theta = \frac{1}{\_\_\_\_}$	$\cot\theta = \frac{1}{\_\_\_\_}$

Quotient Identities
$\tan\theta = \_\_\_\_$
$\cot\theta = \_\_\_\_$

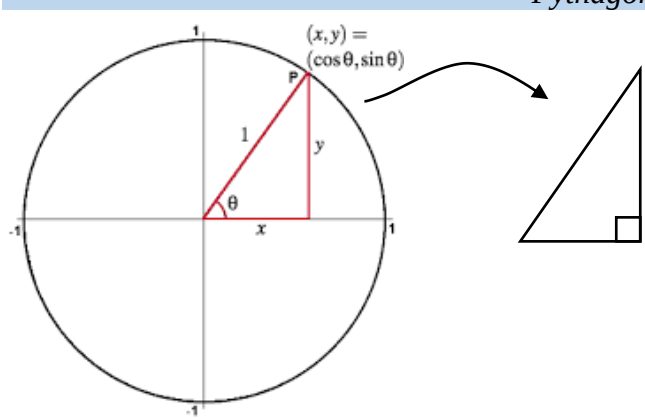
Examples

Simplify.

a) $\cot x \tan x$

b) $\frac{\sin b}{\tan b}$

Pythagorean Identities



Examples

a) Use Pythagorean Identities to find $\sec\theta$ and $\csc\theta$ if $\tan\theta = 3$ and $\cos\theta > 0$.

b) Simplify $\frac{\sin^2\alpha + \tan^2\alpha + \cos^2\alpha}{\sec\alpha}$

Cofunction Identities

$\sin\left(\frac{\pi}{2} - \theta\right) = \cos\theta$	$\cos\left(\frac{\pi}{2} - \theta\right) = \sin\theta$
$\tan\left(\frac{\pi}{2} - \theta\right) = \cot\theta$	$\cot\left(\frac{\pi}{2} - \theta\right) = \tan\theta$
$\sec\left(\frac{\pi}{2} - \theta\right) = \csc\theta$	$\csc\left(\frac{\pi}{2} - \theta\right) = \sec\theta$

Odd-Even Identities

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

Examples

a) If $\tan\left(\frac{\pi}{2} - \theta\right) = -5.326$, find $\cot\theta$.

b) Simplify $\sec(-x)\cos(-x)$

More Practice

Fundamental Trig Identities

http://www.intmath.com/analytic-trigonometry/1-trigonometric-identities.php
http://www.mathguide.com/lessons2/TrigExpress.html
http://www.purplemath.com/modules/proving.htm
https://www.youtube.com/watch?v=CsfHFZL345M
https://www.youtube.com/watch?v=I4mcja8abDc

Homework Assignment

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