4.2 Trig. Derivatives II

Wednesday, June 12, 2019 7:13 AM

$f(x) = \tan x \cdot \csc x \rightarrow f(x) = \sec x$

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

$f'(x) = \sec x \cdot \tan x$

Reciprocal Identities

$\sin x = \frac{1}{\csc x}$ $\quad \csc x = \frac{1}{\sin x}$

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

$\tan x = \frac{1}{\cot x}$ $\quad \cot x = \frac{1}{\tan x}$

Quotient Identities

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

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

Pythagorean Identities

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

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

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

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

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

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

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

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

ex $f(x) = \frac{1 - \cos^2 x}{\sin x} = \frac{\sin^2 x}{\sin x} = \sin x$

$f'(x) = \cos x$

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

$-\cos^2 x \quad -\cos^2 x$

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