10/18/19

HW: TBD

AIM: What is the derivative of sec(x) and csc(x) and cot(x)?

Do Now

Daily Quiz Form B #'s 1-5

1. $f(x) = 2x^3 + 3x^2 - 4$

$f'(x) = 6x^2 + 6x$

2. $g(x) = x^3 - 5\cos x$

$g'(x) = 3x^2 + 5\sin x$

3. $y = \frac{3x-7}{\sqrt{x}} \Rightarrow 3x^{1/2} - 7x^{-1/2}$

$y' = \frac{3}{2}x^{-1/2} + \frac{7}{2}x^{-3/2}$

$y' = \frac{3x+7}{2x^{3/2}}$

$y = \frac{3x}{x^{\frac{1}{2}}} - \frac{7}{x^{\frac{1}{2}}}$

$y = 3x^{\frac{1}{2}} - 7x^{-\frac{1}{2}}$

4. $f(x) = 3x^2\cos x$

$f'(x) = 3x^2(-\sin x) + \cos x(6x)$

$f'(x) = 3x(2\cos x - x\sin x)$

5. $y = \frac{2x-3}{x+2}$

$y' = \frac{(x+2)(2) - (2x-3)}{(x+2)^2}$

$y' = \frac{7}{(x+2)^2}$

5. $y = \frac{3x-2}{x+3}$

$y' = \frac{(x+3)(3) - (3x-2)(1)}{(x+3)^2}$

Oct 16-9:51 AM

Warm Up:

1) Find the derivative of

$$y = \frac{2x^2 - 3}{x^3 - 2x}$$

$$y' = \frac{(x^3-2x)(4x) - (2x^2-3)(3x^2-2)}{(x^3-2x)^2}$$

Oct 18-9:05 AM

$y = \sin x \quad y' = \cos x$

$y = \cos x \quad y' = -\sin x$

$y = \tan x \quad y' = \sec^2 x$

$y = \csc x$

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

$y' = \frac{\cancel{\sin x(0)} - 1\cos x}{\sin^2 x}$

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

$= -\csc x \cot x$

$y = \sec x$

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

$y' = \frac{\cos x(0) - 1(-\sin x)}{\cos^2 x} \rightarrow \frac{\sin x}{\cos^2 x} \rightarrow \frac{\sin x}{\cos x} \cdot \frac{1}{\cos x}$

$y' = \tan x \sec x$

$y' = \sec x \tan x$

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$y = \cot x$

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

$y' = \frac{\sin x(-\sin x) - \cos x(\cos x)}{\sin^2 x}$

$y' = \frac{-\sin^2 x - \cos^2 x}{\sin^2 x} = \frac{-\cancel{(\sin^2 x + \cos^2 x)}^{1}}{\sin^2 x}$

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

$y = \sin x$	$y' = \cos x$
$y = \cos x$	$y' = -\sin x$
$y = \tan x$	$y' = \sec^2 x$
$y = \sec x$	$y' = \sec x \tan x$
$y = \csc x$	$y' = -\csc x \cot x$
$y = \cot x$	$y' = -\csc^2 x$

Oct 18-9:47 AM

$f(\theta) = \theta\cos\theta \qquad c = \frac{\pi}{2}$

$f'(\theta) = \theta(-\sin\theta) + \cos\theta(1)$

$f'(\frac{\pi}{2}) = \frac{\pi}{2}(-\sin \pi/2) + \cos \pi/2$

$= \frac{\pi}{2}(-1) + 0 \rightarrow -\pi/2$

Oct 18-9:55 AM

$s(t) = t^2 \sin t \qquad c = 0$

$s'(t) = t^2(\cos t) + \sin t\,(2t)$

$s'(0) = 0^2(\cos 0) + \sin 0\,(2(0))$

$= 0 + 0 = 0$

Oct 18-9:57 AM