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## Derivatives Of Trig Functions

### **Derivatives Of Trig Functions Examples**

We find the derivative of this function using the power rule and the chain rule:  $y'(x) = (1 \cos^n x)' = [(\cos x)^{-n}]' = -n(\cos x)^{-n-1} \cdot (\cos x)' = -n(\cos x)^{-n-1} \cdot (-\sin x) = n \sin x \cos^{n+1} x$ . Here we assume that  $\cos x \neq 0$ , that is  $x \neq \frac{\pi}{2} + \pi n$ ,  $n \in \mathbb{Z}$ .

### **Derivatives of Trigonometric**

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The following diagrams show the derivatives of trigonometric functions. Scroll down the page for more examples and solutions on how to find the derivatives of trigonometric functions. Derivatives of Trigonometric Functions. Example: Differentiate  $y = x^2 \sin x$ . Solution: Using the Product Rule and the sin derivative, we

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have

## Examples And

**Calculus -**

**Trigonometric**

**Derivatives**

**(examples, solutions**

**...**

$\frac{d}{dx} (\tan(x)) = \sec^2(x)$

$\frac{d}{dx} (\sin(x)) = \cos(x)$

$\frac{d}{dx} (\cos(x)) = -\sin(x)$

$\frac{d}{dx} (\sec(x)) = \sec(x)\tan(x)$

The remaining

three trig functions are

also quotients

involving sine and/or

cosine and so can be

differentiated in a

similar manner. We'll

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leave the details to you. Here are the derivatives of all six of the trig functions.

## **Calculus I - Derivatives of Trig Functions**

Formulae For The  
Derivatives of  
Trigonometric  
Functions 1 -

Derivative of  $\sin x$  The  
derivative of  $f(x) = \sin$   
 $x$  is given by  $f'(x) =$

$\cos x$  2 - Derivative of  
 $\cos x$  The derivative of



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$f(x) = \cos x$  is given by

$$f'(x) = -\sin x$$

Derivative of  $\tan x$  The

derivative of  $f(x) = \tan$

$x$  is given by  $f'(x) =$

$\sec^2 x$

Derivative  
of  $\cot x$

## **Derivatives of the Trigonometric Functions**

The following table  
summarizes the  
derivatives of the six  
trigonometric  
functions, as well as  
their chain rule

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counterparts (that is, the sine, cosine, etc. of a function). Example 1:  
Example 2: Find the derivative of  $y = 3 \sin 3(2x^4 + 1)$ . Put  $u = 2x^4 + 1$  and  $v = \sin u$ . So  $y = 3v^3$ . Example 3: Differentiate Apply the quotient rule first ...

## **Derivatives of Trigonometric Functions - Web Formulas**

3. Using the derivatives

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of  $\sin(x)$  and  $\cos(x)$  and the quotient rule, we can deduce that  $\frac{d}{dx} \tan x = \sec^2(x)$  :

Example Find the derivative of the following function:  $g(x) = 1 + \cos x + \sin x$

Higher Derivatives We see that the higher derivatives of  $\sin x$  and  $\cos x$  form a pattern in that they repeat with a cycle of four. For example, if  $f(x) = \sin x$ , then

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## **Lecture 9 : Derivatives of Trigonometric Functions ...**

In the following discussion and solutions the derivative of a function  $h(x)$  will be denoted by  $h'(x)$  . The following problems require the use of these six basic trigonometry derivatives : These rules follow from the limit definition of derivative, special

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limits, trigonometry identities, or the quotient rule.

## **Differentiation of Trigonometry Functions**

Here is a set of practice problems to accompany the Derivatives of Trig Functions section of the Derivatives chapter of the notes for Paul Dawkins Calculus I course at Lamar University.

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## **Calculus I - And Derivatives of Trig Functions (Practice Problems)**

Find and evaluate derivatives of functions that include trigonometric expressions. For example, for  $f(x)=\cos(5\pi/3-2x)$ , find  $f'(\pi/6)$ . If you're seeing this message, it means we're having trouble loading external resources on our

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website. If you're behind a web filter, please make sure that the domains \*.kastatic.org and \*.kasandbox.org are unblocked.

## **Differentiate trigonometric functions (practice) | Khan ...**

Formulas for the derivatives of the six inverse trig functions and derivative examples, Examples:

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Find the derivatives of the following functions.

1.  $f(x) = (\sin^{-1} x)$  2.  $g(t) = \cos^{-1} \sqrt{2t - 1}$  3.

$y = \tan^{-1}(x/a) + \ln \sqrt{(x-a)/(x+a)}$  Show Step-by-step Solutions.

Inverse Trigonometric Functions - Derivatives - YouTube.

## **Calculus - Inverse Trig Derivatives (solutions, examples**

...

Derivatives of Inverse Trigonometric



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The derivatives of the inverse trigonometric functions can be obtained using the inverse function theorem. For example, the sine function.  $x = \varphi(y) = \sin y$  is the inverse function for.

## **Derivatives of Inverse Trigonometric Functions**

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This calculus video tutorial explains how to calculate the first and second derivative using implicit differentiation. This video contains plenty of examples...

## **Implicit Differentiation Second Derivative Trig Functions ...**

Luckily, the derivatives of trig functions are simple -- they're other trig functions! For

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example, the  
derivative of sine is  
just cosine:  $\frac{d}{dx} \sin(x)$   
 $= \cos(x)$   $\frac{d}{dx} \sin(x) =$   
COS

## **Derivatives of Trig Functions - Free Math Help**

The last trig function  
I'm going to  
differentiate for you is  
tan (x). I will list out the  
other 3 trig functions  
and their derivatives,  
then we will work on  
some examples. For

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tangent, we know that  $\tan(x) = \sin(x)/\cos(x)$ . Which is great, because we know what the derivative of sine and cosine are. So, let's work with what we know..

## **Derivatives of Trig Functions - Not So Trig(ky) [Video]**

Derivatives of Tangent, Cotangent, Secant, and Cosecant. We can get the derivatives of the other four trig

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## Derivatives Of Trig Functions

functions by applying the quotient rule to sine and cosine. For instance,  $\frac{d}{dx} (\tan x) = \frac{1}{\cos^2 x}$ .

### **Derivatives of Trig Functions**

This calculus video tutorial explains how to find the derivative of trigonometric functions such as  $\sin x$ ,  $\cos x$ ,  $\tan x$ ,  $\sec x$ ,  $\csc x$ , and  $\cot x$ . It contains examples...

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## **Derivatives of Trigonometric Functions - Product Rule ...**

Derivative Rules. The Derivative tells us the slope of a function at any point.. There are rules we can follow to find many derivatives.. For example: The slope of a constant value (like 3) is always 0; The slope of a line like  $2x$  is 2, or  $3x$  is 3 etc; and so on. Here are useful rules to help you work

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out the derivatives of many functions (with examples below).

## **Derivative Rules - MATH**

Next: About this document ...

INTEGRATION OF TRIGONOMETRIC INTEGRALS . Recall the definitions of the trigonometric functions. The following indefinite integrals involve all of these well-known

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