

AB Calculus  
3.5 Derivative of Trigonometric Functions

**Trig Derivative Rules:**

$$\frac{d}{dx} \sin x =$$

$$\frac{d}{dx} \cos x =$$

1. Find  $\frac{dy}{dx}$  of:

a.  $y = 2 \sin x - \cos x$

c.  $y = \frac{\cos x}{1 + \sin x}$

b.  $y = x \sin x$

**Derivatives of Other Basic Trig Functions**

$$\frac{d}{dx} \tan x =$$

$$\frac{d}{dx} \cot x =$$

$$\frac{d}{dx} \csc x =$$

$$\frac{d}{dx} \sec x =$$

2. Find  $\frac{dy}{dx}$  of:

a.  $y = 3x + x \tan x$

c.  $y = \sin x \cos x$

b.  $y = \frac{1 - \sin x}{1 + \sin x}$

d.  $y = \sec x + \csc x$

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e.  $y = \frac{\cot x}{4}$

3. Find the first 4 higher order derivatives of  $y = \cos x$

4. Find equations for the lines that are tangent and normal to the graph of

$$f(x) = \frac{\tan x}{x} \text{ at } x = 2.$$