AP Calculus – 2.5 Notes - Derivatives of Trig Functions

Trig Derivatives

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

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

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

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

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

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

Common struggles for students dealing with trig derivatives:
- Memorizing.
- Unit Circle values.
- Simplifying/manipulating trig expressions.
- Trig reciprocals in a calculator.

1. Find the derivative of $y = \sin x \tan x$

2. Find $f'\left(\frac{\pi}{6}\right)$ if $f(x) = \frac{x}{\sec x}$

Find the derivative of each function

3. $h(x) = 2x \tan(x)$

4. $f(x) = \frac{1}{2\cos x}$

Find the derivative at the given *x*-value. Show your work!

5. $f(x) = 2 \sec x$ at $x = \frac{\pi}{4}$.

6. $f(x) = x \cot x$ at $x = \frac{\pi}{6}$.

Find the equations of both the normal line and the tangent line.

7. $y = \sec x$ at $x = \pi$

8. $y = \tan x$ at $x = \frac{\pi}{3}$

Tangent: _____

Tangent: _____

Normal: _____

Normal: _____

Find the equation of the tangent line at the given *x*-value.	
15. $f(x) = 3 \cos x + x$ at $x = \frac{\pi}{2}$	16. $f(x) = 4e^x - 3 \sin x + x^2$ at $x = 0$