

Derivatives of Sine and Cosine

p. 213 - 218 (3.4)

27

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

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

Identities you need to memorize for this course include:

1. $\sin^2(x) + \cos^2(x) = 1$

2. $\sin(2x) = 2\sin(x)\cos(x)$

3. $\cos(2x) = \cos^2(x) - \sin^2(x) = 1 - 2\sin^2(x) = 2\cos^2(x) - 1$

**1. If $f(x) = \sin x$,

$$\text{then } (f)' \left(\frac{\pi}{3} \right) =$$

2. Find the derivative for

$$G(x) = \frac{1}{x^2} + 5\cos(x).$$

3. For $f(x) = -4\cos(x) - \pi$

$$\text{find } \frac{d^2 y}{(d(x))^2}.$$

**4. Find an equation of the

line tangent to the graph of

$y = x + \cos x$ at the point $(0,1)$

5. If $y = 6x \sin(x)$, find y' .

6. Find $\frac{dy}{dx}$ if $y = \frac{3\sin x}{4 + \cos x}$