

## Derivatives of Trig Fcns

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

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

ex. 1 Differentiate

$$u'v + v'u$$

a)  $y = x^2 \sin x$

$$y' = 2x \sin x + \cos x (x^2)$$

$$y' = 2x \sin x + x^2 \cos x$$

b)  $y = \sin 3x$

$$y' = \cos 3x (3)$$

$$y' = 3 \cos 3x$$

c)  $y = \tan x$

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

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

$$y' = \frac{\cos^2 x + \sin^2 x}{\cos^2 x}$$

$$y' = \frac{1}{\cos^2 x}$$

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

d)  $y = \cos(x^2 + 4)$

$$y' = -\sin(x^2 + 4) \cdot (2x)$$

$$y' = -2x \sin(x^2 + 4)$$

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