

Using the Chain Rule to Differentiate Trig Fcns.

ex. 1 Differentiate

a) $2 \sin(3\theta)$

$$\begin{aligned} \frac{d}{d\theta} (2 \sin(3\theta)) &= 2 \cos(3\theta) \cdot 3 \\ &= 6 \cos(3\theta) \end{aligned}$$

b) $\cos^2 x$

$$\frac{d}{dx} \cos^2 x = 2 \cos x (-\sin x)$$

$$\begin{aligned} &= -2 \sin x \cos x \\ &= -\sin 2x \end{aligned}$$

c) $\cos(x^2)$

$$\begin{aligned} \frac{d}{dx} \cos(x^2) &= -\sin(x^2) \cdot (2x) \\ &= -2x \sin(x^2) \end{aligned}$$

d) $\sin(x^2 - 3x)$

$$\begin{aligned} \frac{d}{dx} \sin(x^2 - 3x) &= \cos(x^2 - 3x) \cdot (2x - 3) \\ &= (2x - 3) \cos(x^2 - 3x) \end{aligned}$$

e) $\sin^3(4x)$

$$\begin{aligned} \frac{d}{dx} \sin^3(4x) &= 3 \sin^2(4x) \cdot \cos(4x) \cdot 4 \\ &= 12 \sin^2(4x) \cos(4x) \end{aligned}$$

pg. 153
1-7 odd
13-31 odd