

Question #37499 - Mathematics - Differential Calculus

Find the derivative of

i) $\cos mx$

ii) $\cos^2 x$

Solution:

i) $\cos mx$

Using

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

The chain rule

If $h(x) = f(g(x))$, then

$$\frac{dh}{dx} = \frac{dh}{dg} \cdot \frac{dg}{dx}$$

Constant division rule

$$\frac{d}{dx} ah(x) = a \frac{d}{dx} h(x)$$

$$\frac{d}{dx} \cos mx = -m \sin mx$$

ii) $\cos^2 x$

Using

Power rule

$$\frac{dx^n}{dx} = nx^{n-1}$$

The chain rule

If $h(x) = f(g(x))$, then

$$\frac{dh}{dx} = \frac{dh}{dg} \cdot \frac{dg}{dx}$$

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

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