Answer on Question #52220 - Math - Calculus

The differential coefficient of y = sin3x is ……

Solution

Differential coefficient is another name for derivative. Therefore the differential coefficient is

$$y' = \frac{dy}{dx} = \frac{d}{dx}(\sin 3x) = \frac{d}{dz}\sin(z)|_{z=3x} \cdot \frac{dz}{dx} = \cos(z)|_{z=3x} \cdot (3x)' = (\cos 3x) \cdot 3 = 3\cos 3x.$$

The chain rule for differentiation, property $(Af(x))' = A(f(x))'$ and known formulae of derivatives $\frac{d(\sin z)}{dz} = \cos(z)$, $\frac{d(x)}{dx} = 1$ were applied in this problem.

Answer: $3\cos 3x$.