

Function derivative example

Calculate the derivative of the following function:

$$f(x) = (\cos 5 \cdot x) \cdot e^{-2 \cdot x}$$

Function which we will derivate is a multiply of two complex functions. We can symbolically write represent function $f(x)$ as:

$$f(x) = [a(b(x))] \cdot [c(d(x))]$$

$$f'(x) = [a(b(x))]' \cdot [c(d(x))] + [a(b(x))] \cdot [c(d(x))]'$$

$$[a(b(x))]' = -5 \cdot \sin 5 \cdot x$$

$$[c(d(x))]' = -2 \cdot e^{-2 \cdot x}$$

Derivatives of complex functions are calculated . Now we have to take under consideration formula for derivative of two functions multiply.

$$f'(x) = (-5 \cdot \sin 5 \cdot x) \cdot e^{-2 \cdot x} - 2 \cdot (\cos 5 \cdot x) \cdot e^{-2 \cdot x}$$