Answer on Question #46581 – Math – Differential Calculus | Equations

Differentiate with respect to

$y = e^x \sin x$

Solution:

Find derivative using

The Product Rule

$$\frac{d}{dx}(u \cdot v) = u \cdot \frac{dv}{dx} + v \cdot \frac{du}{dx}$$

Let $u = e^x$ and $v = \sin x$, then

$\frac{du}{dx} = \frac{d}{dx} e^x = e^x$,

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

$$y' = \frac{d}{dx}(e^x \sin x) = e^x \cos x + e^x \sin x = e^x(\cos x + \sin x)$$

Answer:

$\boldsymbol{y' = e^x(\cos x + \sin x)}$