Answer on Question #47037 – Math – Differential Calculus | Equations

Question:

If y = 3x^2.e^x, differentiate with respect to x.

3x^2e^x(x+3)

3x^2e^x(x-3)

3x(x+3)

3x^2

Solution:

The product rule: For the functions f and g, the derivative of the function

$h(x) = f(x)g(x)$ with respect to x is the following:

$$h'(x) = f(x)g'(x) + f'(x)g(x)$$

Therefore:

$$y' = 3x^2(e^x)' + (3x^2)'e^x = 3x^2e^x + 3 \cdot 2x\, e^x = 3xe^x(x+2)$$

Answer: $3xe^x(x+2)$