

## Answer on Question #83169 – Math – Calculus

### Question

Differentiate  $y = x^2(2x - 5)^4$  with respect  $x$ .

### Solution

We have differentiation product of functions

$$\begin{aligned}y' &= (x^2(2x - 5)^4)' = (x^2)'(2x - 5)^4 + x^2((2x - 5)^4)' = \\&= 2x(2x - 5)^4 + x^2 \cdot 4(2x - 5)^3 \cdot (2x - 5)' = 2x(2x - 5)^4 + x^2 \cdot 4(2x - 5)^3 \cdot 2 = \\&= (2x - 5)^3(2x(2x - 5) + 8x^2) = (2x - 5)^3(4x^2 - 10x + 8x^2) = (2x - 5)^3(12x^2 - 10x) = \\&= 2x(6x - 5)(2x - 5)^3.\end{aligned}$$

**Answer:**  $y' = 2x(6x - 5)(2x - 5)^3$ .