2.3b More Product Rule Examples

Recall that the product rule says that given two differentiable functions $f(x)$ and $g(x)$, then the "product function" $F(x) = f(x) \cdot g(x)$ is also differentiable, and

$$\frac{dF}{dx}(x) = \frac{df}{dx}(x) \cdot g(x) + f(x) \cdot \frac{dg}{dx}(x) \text{ or, } F'(x) = f'(x) \cdot g(x) + f(x) \cdot g'(x)$$

Example 2.3.5

Differentiate, and simplify $f(t) = (3t^2 - 2t)(5t^3 - 2t^2 + 1)^3$

Example 2.3.6

Determine the derivative of $h(x) = \dfrac{3x-2}{5x^2+1}$

Example 2.3.7

Differentiate $s(t) = 3t^2(2t-5)$

Example 2.3.8

Determine the slope of a tangent to $f(x) = 2x^3(3x^2 - 5x + 1)^4$ at $x = 1$

Class/Homework for Section 2.3b

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