

Chapter 3.3: Practicing the Product Rule

Calculus I

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1. Take the derivative of the following functions:

(a) $f(x) = 4^x + x^2 + 13 + \ln(4)^x$.

(b) $f(x) = x^2 4^x$

(c) $f(x) = x^3 e^x$

(d) $f(x) = (2x^3 - e^x)\sqrt{x}$

(e) $f(x) = 3e^{\sqrt{x}}$

2. Calculate the derivative of $f(x) = x^7$ two different ways:

(a) Use the power rule.

(b) Write $f(x) = g(x)h(x)$, with $h(x) = x^3$ and $g(x) = x^4$. Use the product rule.

(c) Are your answers the same?