

More Differentiation Practice

1. Take the derivative of the following functions:

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

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

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

(d) $f(x) = e^x x^\pi - 2\pi^x$

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

(f) $\sqrt{x}(5 - e^x)$

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.

3. Do you get the same result using your two different methods? Do you find the internal consistency of mathematics to be comforting or constraining?