

Chain Rule Practice

1. Take the derivative of the following functions:

(a) $f(x) = e^{3x}$

(b) $f(x) = 3e^{3x}$

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

(d) $f(x) = e^{x^3}$

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

(f) $f(x) = x^3 + e^{x^3}$

2. (a) $f(x) = \sqrt{1+x^3}$. Calculate $f'(3)$.

(b) $g(z) = z(1+z)$. Calculate $g'(1)$ and $g'(3)$. Which is bigger, and why?

(c) $h(x) = e^{4x}x^2$. Calculate $h'(1)$.