

1. Let $f(x) = (3x^2 + 1)^2$. We are going to find the derivative of $f(x)$ in three ways and then compare the answers.

(a) Algebraically multiply out the expression for $f(x)$ and then take the derivative.

(b) View $f(x)$ as a product of two functions, $f(x) = (3x^2 + 1)(3x^2 + 1)$ and use the product rule to find $f'(x)$.

(c) Apply the chain rule directly to the expression $f(x) = (3x^2 + 1)^2$

(d) Are your answers in parts a, b, and c the same? Why or why not?