

MCS21 Homework 19

In 1 – 6, use the Product Rule to find $\frac{dy}{dx}$.

Express your answer in simplest form, using only positive exponents.

1. $y = (3x^2 + 6)(2x - \frac{1}{4})$

2. $y = (2 - x - 3x^3)(7 + x^5)$

3. $y = (x^3 + 7x^2 - 8)(2x^{-3} + x^{-4})$

4. $y = \left(\frac{1}{x} + \frac{1}{x^2}\right)(3x^3 + 27)$

5. $y = (3x^2 + 1)^2$

6. $y = (x^5 + 2x)^2$

7. If $f(x) = \left(\frac{1}{x^3} - 7x^5 + 2015\right)(x^6 - 18\sqrt{x} + \sqrt[3]{x})$, find $f'(1)$.