

Exercise 8

Find the derivative of the function.

$$F(x) = (1 + x + x^2)^{99}$$

Solution

Take the derivative using the chain rule.

$$\begin{aligned} F'(x) &= \frac{dF}{dx} = \frac{d}{dx}[(1 + x + x^2)^{99}] \\ &= 99(1 + x + x^2)^{98} \cdot \frac{d}{dx}(1 + x + x^2) \\ &= 99(1 + x + x^2)^{98} \cdot (1 + 2x) \\ &= 99(1 + 2x)(1 + x + x^2)^{98} \end{aligned}$$