

Exercise 7

Differentiate.

$$g(x) = \frac{1 + 2x}{3 - 4x}$$

SolutionUse the quotient rule to differentiate $g(x)$.

$$\begin{aligned} g'(x) &= \frac{d}{dx} \left(\frac{1 + 2x}{3 - 4x} \right) \\ &= \frac{\left[\frac{d}{dx}(1 + 2x) \right] (3 - 4x) - \left[\frac{d}{dx}(3 - 4x) \right] (1 + 2x)}{(3 - 4x)^2} \\ &= \frac{(2)(3 - 4x) - (-4)(1 + 2x)}{(3 - 4x)^2} \\ &= \frac{10}{(3 - 4x)^2} \end{aligned}$$