

Product and quotient rules

3.4.1

(a)

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

(b)

$$h'(s) = (5s^4 - 3\pi s^{\pi-1})(s^2 - 2s - 1) + (s^5 - 3s^\pi)(2s - 2)$$

3.4.2

$$\begin{aligned} (f(x)g(x)h(x))' &= ((f(x)g(x))(h(x)))' = (f(x)g(x))'h(x) + f(x)g(x)h'(x) \\ &= (f'(x)g(x) + f(x)g'(x))h(x) + f(x)g(x)h'(x) \\ &= f'(x)g(x)h(x) + f(x)g'(x)h(x) + f(x)g(x)h'(x) \end{aligned}$$