

1. Let  $f(x) = \sqrt{x}$ ,  $g(x) = x^3 + 3x$ , and  $h(x) = \frac{1}{x^5}$ .

Find the following derivatives.

(a)  $(f \circ g)'(x)$

(b)  $(g \circ f)'(x)$

(c)  $(h \circ g)'(x)$

2. Find the derivative of each function.

(a)  $f(x) = (3x^2 + 2)^{14}$

(b)  $f(x) = \sqrt{x^2 + 3x} (8x^8 - 13x)$

(c)  $f(x) = \left( \frac{3x^2 + x - 5}{x^8 - 3x + 1} \right)^3$