

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