

1. Find both $(f \circ g)(x)$ and $(g \circ f)(x)$. Then find $(g \circ f)(1)$.

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(a) $f(x) = 2x^2 - 1$ and $g(x) = x + 1$.

- $(f \circ g)(x)$

- $(g \circ f)(x)$

- $(g \circ f)(1)$

(b) $f(x) = x^2 + 6$ and $g(x) = x^3 - 2x - 4$.

- $(f \circ g)(x)$

- $(g \circ f)(x)$

- $(g \circ f)(1)$

(c) $f(x) = 3x^2 - 2x + 1$ and $g(x) = x - 4$.

- $(f \circ g)(x)$

- $(g \circ f)(x)$

- $(g \circ f)(1)$

(d) $f(x) = x^4 + 3x$ and $g(x) = 2x^2 + 3$.

- $(f \circ g)(x)$

- $(g \circ f)(x)$

- $(g \circ f)(1)$

2. Identify the inside and outside functions.

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(a) $(x + 1)^2 - 5(x + 1) + 7$

- Inside:

- Outside:

(b) $3(2x + 3)^3 + 7(2x + 3)^2$

- Inside:

- Outside:

(c) $(x^3 + 2x)^5$

- Inside:

- Outside:

3. Find the derivatives of the given functions

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(a) $f(x) = 2x$

(b) $g(x) = 3x^2 + 3x$

(c) $g(x) = 7$

(d) $f(x) = x$

(e) $h(x) = 4x^4$

(f) $h(x) = x^4 + 2x^2 - 5$

(g) $h(x) = x^3 + 4x + 5$

(h) $f(x) = x + 1$

(i) $f(x) = x^3$

(j) $g(x) = 5x^{10}$

(k) $g(x) = 3x^3 - 4x$

(l) $f(x) = 4x + 5x - 10$

(m) $h(x) = 5.67$

(n) $f(x) = x^2 - 4x + 2$

(o) $f(x) = -2x^2 - x$

(p) $h(x) = -x^6 - 4x^5 + 3x^4 + 2x^3 + 4x + 7$

(q) $g(x) = -x^4 + 3x^2 - x$

(r) $h(x) = x^4 + 5x^3 + 3x + 2$

(s) $g(x) = 2x + 5x^7 - 4x^2$

(t) $f(x) = x^{100} + 4$