

1. Evaluate the following derivatives. Do **not** simplify.

(a) $f(x) = x \cos(5x)$

(b) $T = (2s^{-4} + 3s^{-2} + 2)^{-6}$

(c) $y = \left(\frac{3x^2-5}{2x^2+7}\right)^2$

(d) $f(x) = (e^{\sec(x^2)})$

(e) $f(x) = e^{-1/x} \tan(x^2)$

(f) $y = x^3(9x + 1)^5$

(g) $A = \frac{1}{(8-5x+7x^2)^{10}}$

(h) $f(x) = [\tan(e^x)]^3$

(i) $y = \sin(e^{2x} + e^{-2x})$

(j) $\frac{d}{dx}[x^5 + \frac{d}{dx}(\sec(x))]$

(k) $y = x^5 - 7x^4 + \pi x^3 - 17x^2 + 12x + 9^2$

(l) $f(x) = 5x^4 \sin(x^2 + 3x)$

(m) $y = \frac{\tan(5x)}{x + \sec(5x)}$

(n) $\frac{d^4}{dx^4}[5x^2 - x^5]$

(o) $F(x) = \{2 + [1 + (x^2 + 3^2)^3]\}^4$

(p) $y = u^3 - 1, \quad u = \sec(x), \quad x = 5t$

(q) $f(x) = x^5 - x^{\frac{1}{7}} + x^\pi$

(r) $f(x) = \ln(\sec(x^2 + 7))$

(s) $f(x) = \frac{e^{\cos(x)}}{\tan(x)}$

(t) $y = x^2 \ln(\arctan(x))$

(u) $f(x) = \arcsin(e^x)$

(v) $g(x) = \arctan(x^2 + 1)$