

Due at the beginning of class Tuesday, November 29. Write your solutions on separate paper (no ragged edges, please) with multiple pages stapled. Have it ready to turn in at the beginning of class.

1. Find $f'(x)$ for each function. Simplify after differentiating.

a. $f(x) = \frac{x}{x^2 + 9}$

b. $f(x) = \frac{x + 1}{x - 1}$

c. $f(x) = \frac{\pi}{2x - 7}$

2. Find $g'(t)$ for each function. Simplify after differentiating.

a. $g(t) = (5 - t)^{12}$

b. $g(t) = \sqrt{t^2 + 4}$

c. $g(t) = (1 - t^2)^{3/4}$

3. Find du/dz for each function.

a. $u = z^3(1 - z)^5$

b. $u = \frac{z + 1}{(z - 1)^3}$

c. $u = \frac{2z}{\sqrt{3z^2 + 5}}$

4. Use implicit differentiation to find dy/dx for each curve.

a. $x^3 + y^3 = 1$

b. $x^2 + 6xy + y^2 = 8$

c. $x^2y^2 - 9x^2 - 4y^2 = 0$