1. Evaluate each of the following indefinite integrals.

(a) \[ \int (x^4 + x^3 - 6x) \, dx \]

(b) \[ \int (2x^2 + 1)(x - 3) \, dx \]

(c) \[ \int (e^x + \sqrt{x} - 4) \, dx \]

(d) \[ \int \frac{2x - 1}{x^2} \, dx \] (Hint: Try splitting into two separate fractions.)

2. Find a function \( f \) satisfying \( f'(x) = \frac{1}{x} + \frac{3}{\sqrt{x}} \) and \( f(1) = 0. \)

3. Find the domain of each function, then make a sketch of the level curves of the function with the specified \( z \)-values. If you’re feeling really ambitious, try to draw the graph of each function in 3D.

(a) \( f(x, y) = x + 2y; \quad z = -4, -2, 0, 2, 4 \)

(b) \( f(x, y) = xy; \quad z = -2, -1, 0, 1, 2 \)

(c) \( f(x, y) = x^2; \quad z = 0, 1, 2, 3, 4 \)

(d) \( f(x, y) = \frac{1}{x^2 + y^2}; \quad z = \frac{1}{4}, \frac{1}{2}, \frac{3}{4}, 1 \)

(e) \( f(x, y) = \sqrt{y - x^2}; \quad z = 0, 1, 2, 3 \)