

Worksheet 3: 9.1-9.2

Exercise 1 (§9.1 # 5) Let $f(x, y) = e^x + \ln(x + y)$. Find the values of f at $(x, y) = (1, 0)$, $(2, -1)$, $(0, e)$ and $(0, e^2)$.

Exercise 2 (§9.1 # 29) Let $f(x, y) = 4x - 2y^2$ and find the following

$$\frac{f(x+h, y) - f(x, y)}{h} \quad \text{and} \quad \lim_{h \rightarrow 0} \frac{f(x+h, y) - f(x, y)}{h}$$

Exercise 3 (§9.2 # 13, 15, 17) Take the partial derivatives f_x and f_y for the following functions of x and y .

$$\ln |1 + 5x^3y^2| \quad \sqrt{x^4 + 3xy + y^4 + 10} \quad \frac{3x^2y}{e^{xy} + 2}$$

Exercise 4 (§9.2 # 37) Find f_x, f_y and f_z for $f(x, y)$ given by

$$2x^2 + 3xy - 4z^5$$