Math 2513 – Summer 2024

Quiz 3

Name: Student ID:

1 – For the equation $f(x,y) = x^2 + y^3$, find a constant approximation at (1.1, -3.2). Find a linear approximation at the same point. (2)

2 – Find the gradient of the equation $f(x,y,z) = 2x^2 + e^{xyz}$. (1)

3 – Find the directional derivative of e^{x+y+z} in the direction of the z-axis, at the point (1,0,1). (1)

4 – Find the critical points of the equation $f(x,y) = 2x^2 + y^3 + 4xy$. Which are minimums, maximums, or unknown? (2)