Math 2513 – Summer 2024

Quiz 2

Name: Student ID:

1 – What is the equation of a line that is parallel to the x-axis and goes through the point (1,2,3)? (1)

2 – Show that Clairault's Theorem holds for the equations (2)

a) $f(x,y,z) = 2x^2 + 5y - 3z^3$

b) $g(x,y,z) = \sin(xy) + z$

3 – Answer the following questions for the formula $f(x,y,z) = x^2 + 6x + y^2 – 8y + z^2 + 12z$: (2)

a) Rewrite this equation into a more standard form. What is the shape of this surface?

b) What is a point of contact between this surface and a tangent plane parallel to the xy-plane?