MTH241 Fall 2024: Quiz 05

Name:
UID:

Closed book, no calculator, show your work clearly.

1. (`5pt`) Let $z = f(x, y)$, $x = -u + v$ and $y = u - v$. Find $\frac{\partial z}{\partial u} + \frac{\partial z}{\partial v}$. (Grading: **2pt**: working; **2pt**: partial derivatives; **1pt**: correct answer)

2. (`5pt`) Let the surface be defined as

$$\left\{(x, y, z) \mid \frac{x^2}{1} + \frac{y^2}{4} + \frac{z^2}{9} = 3\right\}.$$

Find the equation of the tangent plane to the surface at the point $(-1, -2, -3)$. (Grading: **2pt**: working; **2pt**: normal vector; **1pt**: correct equation)

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