

Name:

1. Find the equation of the tangent plane to the graph of f at the point $(2, -1, f(2, -1))$, if $f(x, y) = x^2 + 4y^2$.

2. Find the derivative matrix for the function $f : \mathbb{R}^2 \rightarrow \mathbb{R}^2$ defined by $f(u, v) = (u \sin v, e^{uv})$, and evaluate it at the point $(0, 1)$.

(That is, compute $D_{(0,1)}f = \frac{\partial(x, y)}{\partial(u, v)} \Big|_{(x,y)=(0,1)}$ if $x = u \sin v$ and $y = e^{uv}$.)