

San Jose State University
Department of Mathematics

Math 32, Instructor: Plamen Koev, Practice Midterm 3

1. Find the absolute maximum and minimum of $f(x, y) = 2x^3 + y^4$ on $D = \{(x, y) \mid x^2 + y^2 \leq 1\}$.
2. Find the derivative of the function $f(x, y, z) = xe^y + ye^z + ze^x$ at the point $(0, 0, 0)$ in the direction of the vector $\langle 5, 1, 2 \rangle$.
3. Find the equations of the tangent plane and the normal line to the surface $x^2 + 2y^2 + 3z^2 = 6$ at the point $(1, 1, 1)$.
4. Find $\frac{\partial M}{\partial u}$ and $\frac{\partial M}{\partial v}$ if $M = xe^{y-z^2}$, $x = 2uv$, $y = u - v$, and $z = u + v$.
5. Find f_{xyz} if $f(x, y, z) = x\sqrt{y-z}$.