

Math 53 - Multivariable Calculus

Quiz # 6

October 6th, 2011

Exercise 1. Find the equation of the plane containing the three points $P_0 = (2, 1, 0)$, $P_1 = (1, 0, 1)$, $P_2 = (2, -1, 1)$. Also, find the intersection of this plane with the line parallel to the vector $\vec{V} = \langle 1, 1, 1 \rangle$ and passing through the point $S = (-1, 0, 0)$.

Exercise 2. Find the equation of the tangent plane to the surface $x^3y + z^2 = 3$ at the point $(-1, 1, 2)$.

Exercise 3. Suppose $(1, 1)$ is a critical point of a function f with continuous second derivatives. What can you say about f given that $f_{xx}(1, 1) = 4$, $f_{xy}(1, 1) = 1$, and $f_{yy}(1, 1) = 2$.