

MATH 251, Section _____

Thursday, Sept. 26, 2013

Due Tuesday, Oct. 1, 2013 at the beginning of class.

Quiz#5 (Sections 12.5, 12.6)

Dr. M. Vorobets

NAME (print): _____

No credit for unsupported answers will be given. Clearly indicate your final answer

1. [3 pts.] Let $z = x \tan^{-1}(xy)$, where $x = ts$ and $y = se^t$. Find $\frac{\partial z}{\partial s}$ and $\frac{\partial z}{\partial t}$.

2. [3 pts.] If $y^2 z e^{x+y} - \sin(xyz) = 0$, find $\frac{\partial z}{\partial x}$ and $\frac{\partial z}{\partial y}$.

[more problems on back]

3. [2 pts.] Find the directional derivative of $f(x, y) = 2\sqrt{x} - y^2$ in the direction of $\vec{v} = \langle 3, -4 \rangle$.

4. [2 pts.] Find an equation of the tangent plane to $x^2 - 2y^2 - 3z^2 + xyz = 4$ at the point $(3, -2, -1)$.