

MATH 311 – CALCULUS 3
Spring 2006
QUIZ 6

NAME _____

1. Find the linear (or tangent) approximation for $f(x, y) = \sqrt{x^2 + y^2}$ at the point $(3, 4)$ and use it to estimate $\sqrt{2.98^2 + 4.01^2}$.

2. Find parametric equations for the line normal to the graph of $z = x^2 + y^2$ at the point $(1, 2, 5)$.

3. Let $f(x, y) = x^2y$, $x = 3 \cos t$ and $y = 4 \sin t$.

$$\frac{df}{dt} =$$

4. Assume y is implicitly defined as a function of x by the equation $3xy^2 = \tan(xy)$. Use methods of Calculus 3 to find $\frac{dy}{dx}$.

$$\frac{dy}{dx} =$$