———————— Quiz #3 ————————

Quiz #3

The following is Quiz #3. This quiz will be open until Tuesday, October 19th at 11:59 PM. Please complete this quiz on separate paper or on a tablet. Clearly indicate the question number for each question. Please show all work and clearly indicate your answers. Remember, this quiz is an opportunity for you to demonstrate what you know. You may treat this quiz as a take-home quiz. This means that you may work with each other. However, please do not simply copy answers off each other. The point of this is to be able to help each other out if you need the assistance. You may seek out assistance from tutors. Please do not use other external sources for assistance or to do the work for you, such as apps or other websites. You may use a calculator on this quiz. Once you complete this quiz, please submit a pdf of your quiz to Canvas. If you are using paper, you can in your quiz using the Adobe Scan app or any other scanning app.

Quiz #3:

1. Given $f(x, y) = x^2 y^3 \sin(x^4 y^3)$. Find the following.

(2 points) a. f_x

(2 points) b. f_y

(3 points) c. f_{xx}

(3 points) d. f_{xy}

(3 points) e. f_{yy}

(3 points) 2. Given
$w = x^2 y^5 + z^3$, $x = 6t^2 + 4t + 5$, $y = 2t^3 + 7t - 8$, $z = 5t^3 + 8t - 4$. Find $\frac{dw}{dt}$.

(4 points) 3. Find the equation of the tangent plane and the normal line at the point $P_0(1, 1, -1)$ on the surface $f(x, y) = x^2 - xy - y^2$.

(5 points) 4. Find the linearization of $f(x, y) = \frac{1+y}{1+x}$ at the point $(1, 3)$. Then, use the linearization to approximate the function at (1.2, 3.1).

Points 25