Math 201 (Semester 123)
Quiz Two

Name:_____
ID Num:_____
Section:_____ Serial Number: _____

1. (a) Find the angle between the planes

$$2x - y + 3z = 1 \text{ and } x - y - z = 0.$$

(b) Find the distance from the point $(1, 2, -1)$ to the line

$$x = 1 + t, \quad y = 2 - t, \quad z = 2 + t.$$

2. (a) If $z = \sin(xy^2) + 3xy$ and $x = 4t + 3$ and $y = e^t$, what is $\frac{dz}{dt}\big|_{(x,y)=(\pi,1)}$?

(b) What is the slope of the surface $z = x^2y^2 - 4e^x + 3y$ at the point $(0, 0, -4)$ in the direction $(1, -1)$?

3. (a) Find the linearisation of the function $f(x, y, z) = x^{12} + y^{12} + 3z^{12}$ at the point $(1, 1, -1)$.

(b) If, at the point $(1, 1, -1)$, the error in x is $+0.03$, the error in y is $+0.1$, and the error in z is -0.04, what is the approximate error in f in part (a)?