Math 116 **Test 6 (Quiz)** Satya Mandal
Fall 07 Maximum Points 20 March 30, 2007

1. Let $f(x, y) = 2x^2y + y^3$.

   (a) Find the total differential of f.

   total differential $dz :=$

   (b) What is the approximate change in f when (x, y) changes from $(1, 2)$ to $(1.01, 1.98)$.

   approximate change =

2. Let $f(x, y) = \sqrt{x^2 + y^2}$.

   (a) Find the total differential of f.

   total differential $dz :=$

   (b) What is the approximate change in f when (x, y) changes from $(4, 3)$ to $(4.1, 2.96)$.

   approximate change =

3. Let $f(x,y) = \frac{x+y}{x-y}$.

   (a) Find the total differential of f.

   total differential $dz :=$

   (b) What is the approximate change in f when (x,y) changes from $(2,1)$ to $(2.1, 0.99)$.

   approximate change =

4. Let $f(x,y) = \sqrt{y}e^x$.

   (a) Find the total differential of f.

   total differential $dz :=$

   (b) What is the approximate change in f when (x,y) changes from $(0,1)$ to $(0.1, 1.1)$.

   approximate change =