Math 2551 Worksheet Section 14.3

1. Find f_x and f_y for:

   (a) $f(x,y) = \left(xy + \dfrac{y}{3}\right)^{3/2}$

   (b) $f(x,y) = e^{x^2 y} \ln x$

   (c) $f(x,y) = \displaystyle\sum_{n=0}^{\infty}(xy)^n \qquad (|xy| < 1)$

2. Find f_x, f_y, and f_z for the function $f(x,y,z) = z^{x^y}$ $\qquad (x > 0, \ y > 0, \ z > 0)$.

3. Let $f(x,y) = x^2 y^2$. Find $f_y(a,b)$ using the limit definition of the partial derivative.

4. Find all the second partial derivatives for $f(x,y) = e^x + x \ln y$.