

Name \_\_\_\_\_

Homework 13  
Sections 14.6 & 14.7

1. (6) Find and simplify  $\frac{\partial z}{\partial x}$  and  $\frac{\partial z}{\partial y}$  for  $z = u^2 e^{5w}$ ,  $u = xy^2$ ,  $w = \ln(x^2 y)$ .

2. (7) Find the quadratic Taylor polynomial,  $Q(x, y)$ , about  $(5, 2)$  for the function  $f(x, y) = \sqrt{(2x - 3y)^3}$ .

3. (7) Determine the best quadratic approximation of  $g(x, y) = x + \sin(xy + 2) + xy^3 - 5x^2$  near  $(2, -1)$ .