

Name \_\_\_\_\_

Homework 10  
Section 14.3

1. (6) Find the equation of the plane which is tangent to the graph of

$$f(x, y) = y^4x^3 - xy^2 + x^y$$

at the point  $(1, 2)$ . Write your answer in the form  $z = ax + by + c$ .

2. (4) The temperature, in  $^{\circ}\text{C}$ , of an unevenly heated metal plate at the point  $(x, y)$  is given by  $T(x, y)$ . If  $T(5, 3) = 85$ ,  $T_x(5, 3) = 20$ , and  $T_y(5, 3) = 14$ , estimate the temperature at the point  $(5.1, 2.8)$ .

3. (5) Find the differential of the function  $f(x, y) = 2x^3\sqrt{y} + x \sin(y^2)$ .

4. (5) Find the differential of the function  $f(w, x, y, z) = wy + xz + z^3$  at the point  $(5, -9, 8, 2)$ .