Name _____

Homework 9
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 °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. (6) Find the differential of the function $f(x, y) = 2x^3\sqrt{y} + x \sin y$.

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