Name _____

Homework 9
Sections 14.1 & 14.2

1. (1,1,2) The monthly payment on a home loan is a function, $P(A, r, n)$, of the amount of the loan, A, the interest rate, r, and the number of years of the loan, n.

   (a) Is $\frac{\partial P}{\partial A}$ positive or negative? Why?

   (b) Is $P_n(A, r, n)$ positive or negative? Why?

   (c) Give a practical interpretation of the statement $P_r(200000, 6, 30) = 130$.

2. (5ea) Consider the function $f(x, y, z) = \dfrac{xyz}{5^x + y^y + z^2}$. Compute the following quantities:

   (a) $f_x(1, 2, 3)$

   (b) $\left.\dfrac{\partial f}{\partial z}\right|_{(1,2,3)}$

3. (6) Is there a function f which has the following partial derivatives? If so, what is it? Are there others?

$$f_x(x,y) = x^2 + xy^2\cos x + y^2\sin x \qquad\qquad f_y(x,y) = 2xy\sin x + y^2$$