HW #6

CALCULUS III

Question 1. Show that the limit
$$\lim_{(x,y)\to(0,0)} \frac{x^3 y^2}{x^4 + y^8}$$
does not exist.

Question 2. Find the limit
$$\lim_{(x,y)\to(0,0)} \left(\frac{x^2 y^4 \cos(x + y^2)}{x^2 + y^2} \right)$$

Question 3. Find the limit
$$\lim_{(x,y)\to(3,3)} \frac{e^{(x-y)^3} - 1}{(x - y)^2}$$

Question 4. If z is an implicit function of x, y defined by
$$xe^y + ye^z + ze^x = e^{xyz}$$
use implicit differentiation to find $\frac{\partial z}{\partial x}$ and $\frac{\partial z}{\partial y}$.