1. Find the limit, if it exists, or show that the limit does not exist. Fully justify your answer.

   (a) [3 pts] $\lim_{(x,y)\to(0,0)} \dfrac{y^4}{x^4+y^4}$

   (b) [3 pts] $\lim_{(x,y)\to(0,0)} xy \sin\left(\dfrac{1}{x^2+y^2}\right)$

   (c) [3 pts] $\lim_{(x,y)\to(0,0)} \dfrac{x^2 y e^y}{x^4+5y^2}$

2. [6 pts] Find an equation of the tangent plane to the surface $z = \ln(x - 9y)$ at the point $(10, 1, 0)$.