1. Find the limit if it exists, or show that the limit does not exist.

   (a) $\displaystyle \lim_{(x,\,y)\to(2,\,1)} \frac{4 - xy}{x^2 + 3y^2}$

   (b) $\displaystyle \lim_{(x,\,y)\to(0,\,0)} \frac{x^2}{x^2 + y^2}$

2. Let $f(x,\,y) = xe^{-xy}$. Compute the partial derivatives f_x, f_y, f_{yx} and f_{yy}.