1. $f(x,y) = x^2 + y^2 + x^{-2}y^{-2}$

   - $f_x(x,y) = 2x + -2x^{-3}y^{-2}$
   - $f_x(x,y) = 2y + -2x^{-2}y^{-3}$

   $$H_f(x,y) = \begin{vmatrix} 2 + 6x^{-4}y^{-2} & 4x^{-3}y^{-3} \\ 4x^{-3}y^{-3} & 2 + 6x^{-2}y^{-4} \end{vmatrix}$$

   - $(1,1)$
     $H_f(1,1) = 16 - 16 = 0$
   - $(1,-1)$
     $H_f(1,-1) = 8 - 16 = -8$
   - $(-1,-1)$
     $H_f(-1,-1) = 16 - 16 = 0$
   - $(-1,1)$
     $H_f(-1,1) = 8 - 16 = -8$

2. $f(x,y) = xye^{-x^2-y^2}$

   - $f_x(x,y) = e^{-x^2-y^2}(y - 2x^2y)$
   - $f_x(x,y) = e^{-x^2-y^2}(x + -2xy^2)$

   $$H_f(x,y) = \begin{vmatrix} ye^{-x^2-y^2}2x(2x^2-3) & (2x^2-1)(2y^2-1)e^{-x^2-y^2} \\ (2x^2-1)(2y^2-1)e^{-x^2-y^2} & 2xy(2y^2-3)e^{-x^2-y^2} \end{vmatrix}$$

   Ptos criticos

   - $(0,0)$ pto silla
   - $(1,1)$ minimo
   - $(1,-1)$ maximo
   - $(-1,1)$ minimo
   - $(-1,-1)$ maximo