

1. [5pts] Find the local extrema and saddle points (if they exist) of

$$f(x, y) = 3x^2 - 2xy + y^2 - 8y$$

2. [5pts] Use Lagrange multipliers to find the maximum and minimum of  $f(x, y) = xy$  on the ellipse  $2x^2 + y^2 = 1$ .