Math 2415
Paper Homework #9

1. **14.7: Global Optimization** Find the absolute maximum and minimum values of $f(x, y) = y + 2x - xy$ on the closed triangular domain with vertices $(0, 0)$, $(2, 0)$, and $(0, 6)$.

2. **14.7: Global Optimization** Find the absolute maximum and minimum values of the function $f(x, y) = x^2 y$ on the domain $D = \{(x, y) | x \le 0, y \ge 0, x^2 + y^2 \le 9\}$

3. **14.8, Constrained Optimization:** Use the method of Lagrange multipliers to find the maximum and minimum of $z = f(x, y) = x^2 y$ on the circle $x^2 + y^2 = 4$. To the extent possible solve the problem using a geometric method (a picture) as well as algebraically.

4. **14.8, Constrained Optimization:** Use the method of Lagrange Multipliers to find the absolute maximum and absolute minimum of the function $f(x, y) = x^2 + (y - 2)^2$ on the ellipse $x^2 + 2y^2 = 18$. [Hint: There are 4 critical points.]