

Math 2415
Paper Homework #9

1. **14.7: Global Optimization** Find the absolute maximum and minimum values of $f(x, y) = x + 2y - xy$ on the closed triangular domain with vertices $(0, 0)$, $(0, 2)$, and $(6, 0)$.
2. **14.7: Global Optimization** Find the absolute maximum and minimum values of the function $f(x, y) = xy^2$ on the domain $D = \{(x, y) | x \geq 0, y \leq 0, x^2 + y^2 \leq 9\}$
3. **14.8, Constrained Optimization:** Use the method of Lagrange Multipliers to find the absolute maximum and minimum values of the function $f(x, y) = x^2y$ subject to the constraint $x^2 + y^2 = 9$. 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 minimize $f(x, y) = x^2 + y^2$ subject to the constraint $xy^2 = 54$. Explain why the solution is the point on the curve $xy^2 = 54$ that is closest to the origin.