Math 2551 Worksheet Section 14.8

1. Find the maximum and minimum values of x^2y subject to the constraint $x^2 + 2y^2 = 6$.

2. Find the point on the plane $x + 2y + 3z = 13$ closest to the point $(1, 1, 1)$.

3. Find the maximum value that $f(x, y, z) = x^2 + 2y - z^2$ can have on the line of intersection of the planes $2x - y = 0$ and $y + z = 0$.

4. Find the maximum and minimum values of $f(x, y, z) = x - 2y + 5z$ on the sphere $x^2 + y^2 + z^2 = 14$.