

CALCULUS 3 - FALL 2017 - HOMEWORK 5

1,2) Find all relative max and mins of $f(x) = x^3 + y^3 - 3x - 12y + 20$

3,4) A package in the shape of a rectangular box can be mailed Parcel Post if the sum of the length and girth (distance around the package perpendicular to the length) is under 108 inches. Find the dimensions of the package with largest volume that can be sent.

5,6) Find the values of $x, y,$ and z so that $f(x, y, z) = x^2 + 2y^2 + 3z^2$ is a maximum, subject to the point (x, y, z) being on the planes given by $x + y + z = 1$ and $x - y + 2z = 2$.