"QUIZ" for Lecture 11

NAME: (print!) SAI EMBAR **Section:** 23

E-MAIL SCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com (Attachment: q11FirstLast.pdf) ASAP BUT NO LATER THAN Oct. 12, 8:00pm Deadline extended to Oct. 17

1. Use Largange multipliers (no credit for other methods) to find the **smallest** value that $x+y+z$ can be, given that $xyz = 125$

$f(x,y,z) = x+y+z \quad ; xyz = 125$

$f_x = 1$

$f_y = 1$

$f_z = 1$

$\nabla f = \langle 1,1,1 \rangle$

$g_x = yz$

$g_y = xz$

$g_z = xy$

$\nabla g = \langle yz, xz, xy \rangle$

$\langle 1,1,1 \rangle = \lambda \langle yz, xz, xy \rangle$

$\lambda(yz) = 1$

$xz(\lambda) = 1$

$xy(\lambda) = 1$

I think I did something wrong.

2. Use Largange multipliers (no credit for other methods) to find the **largest** value that xyz can be, given that $x + y + z = 15$

$f_x = yz$

$f_y = xz$

$f_z = xy$

$\nabla f \langle yz, xz, xy \rangle$

$g_x = 1$

$g_y = 1$

$g_z = 1$

$\langle yz, xz, xy \rangle = \lambda \langle 1,1,1 \rangle$

$yz = \lambda$

$xz = \lambda$

$xy = \lambda$

$\lambda^3 = xyz$

Messed up