"QUIZ" for Lecture 11

NAME: (print!) _____ **Section:** _____

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 $xyz = 125$

$f_x = 1$
$f_y = 1$
$f_z = 1$

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

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

$\nabla f = \lambda \nabla g$

$g_x = yz$
$g_y = xz$
$g_z = xy$

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

$1 = \lambda yz$
$1 = \lambda xz$
$1 = \lambda xy$

$1 = xyz\lambda^{3/2}$

$1 = x^2y^2z^2\lambda^3$

no min

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

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

$yz = \lambda$
$xz = \lambda$
$xy = \lambda$

no max