"QUIZ" for Lecture 11

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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 $xyz = 125$

$\nabla f = \langle 1,1,1 \rangle$ $\nabla g = \langle yz, xz, xy \rangle$

$\langle 1,1,1 \rangle \cdot L = \langle yz, xz, xy \rangle$

$L = yz$ $L = xz$ $L = xy$ $xyz = 125$

$L^3 = x^2y^2z^2$ $\sqrt{L^3} = xyz$ $L^{3/2} = 125$

$L = 25$

$(x,y,z) = (5,5,5)$

Smallest: $f(5,5,5) = 15$

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

$\nabla f = \langle yz, xz, xy \rangle$ $\nabla g (1,1,1 \rangle$

$\langle yz, xz, xy \rangle = L \cdot \langle 1,1,1 \rangle$

$yz = L$ $xz = L$ $xy = L$ $x+y+z = 15$

$(x,y,z) = (5,5,5)$

Largest: $f(5,5,5) = 125$