

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

$$\begin{aligned} &\langle 1, 1, 1 \rangle \quad \langle yz, xz, xy \rangle \\ &L = yz \quad L = xz \quad L = xy \quad xyz = 125 \\ &L = 25 \quad x = 5 \quad y = 5 \quad z = 5 \\ &= 15 \end{aligned}$$

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

$$\begin{aligned} &\langle yz, xz, xy \rangle \quad \langle 1, 1, 1 \rangle \\ &yz = L \quad xz = L \quad xy = L \quad x + y + z = 15 \\ &L = 0 \quad x = 0 \quad y = 0 \quad z = 15 \\ &= 0 \end{aligned}$$