

Quiz #9; Tuesday, date: 03/20/2018
MATH 53 Multivariable Calculus with Stankova
Section #117; time: 5 – 6:30 pm
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1. The following extreme value problems has a solution with both a maximum value and a minimum value. Use Lagrange multipliers to find the extreme values of the function subject to the given constraint.

$$f(x, y, z) = x^3 + y^3 + z^3; \quad x^2 + y^2 + z^2 = 1.$$

2. *True / False?* If f is a continuous function such that $f(x, y) = -f(y, x)$, then

$$\int_a^b \int_a^b f(x, y) dx dy = 0.$$

3. *True / False?* For a continuous function f , suppose $f_{\max}, f_{\min}, f_{\text{avg}}$ are its absolute maximum, absolute minimum and average value on a rectangle. Then we must have

$$f_{\max} \geq f_{\text{avg}} \geq f_{\min}$$