Questions and Answers

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1 Seminar 1

1.1 question 1.26

Q: Should it be "equality" in Kuhn-Tucker condition equation (6): $p_1x_1 + p_2x_2 \leq y$ (slides pp.16)?

A: You can argue it is "equality" for a well defined classical utility function, since the solution is always on the boundary(you can always spend the rest part of your budget to imporve your utility).
But note that Kuhn-Tucker condition describes the most general case for a value maximization problem. If the utility function is weired, for example, in Figure 1, the utility function ($u(x_1, x_2) = 3 - (x_1 - 2)^2 - (x_2 - 2)^2$) looks like a cone, the "peak" of the cone is within the "budget plane($x + y = 6$)". Your utility can therefore be maximized within your budget. "$\leq$" allows this case.

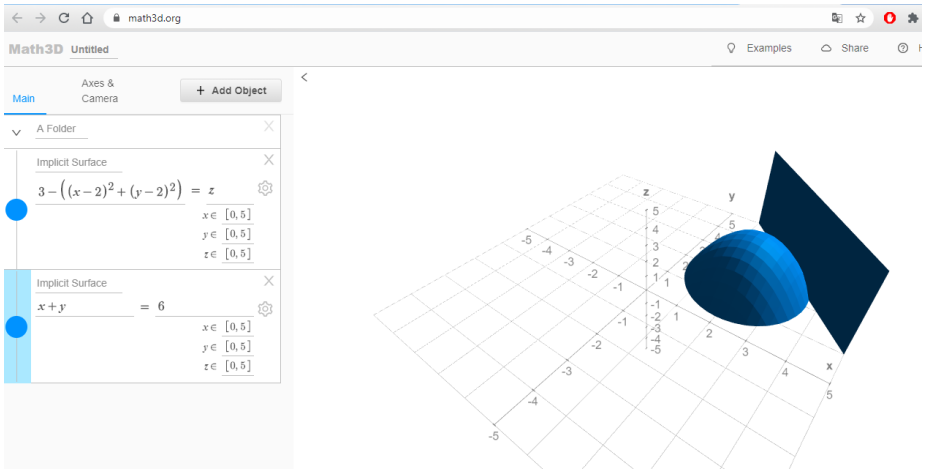

Figure 1: A cone-like utility function and a loose budget

Try to make some graphs yourself on https://www.math3d.org/. Always remember your utility is the extra dimension (z-axis in Figure 1).

2 Seminar 2

2.1 question 1.

3 Seminar 7

3.1 question 3