Microeconomics — class 3

1.

Using KKT necessary conditions for problems with inequality constraints, repeat the procedure of finding a maximum of locally nonsatiated, monotone and strictly convex preferences represented by a differentiable utility function.

2.

Using KKT necessary conditions for problems with inequality constraints, repeat the procedure of finding a maximum of perfect substitutes utility function $u(x_1, u_2) = a \cdot x_1 + b \cdot x_2$ over Walrasian budget set $B_{\mathbf{p},m}$.

3.

Prove envelope theorem for problems with constraints.

4.

What inclusions hold between

$\Gamma^+(A \cup B)$ and $\Gamma^+(A) \cup \Gamma^+(B)$;

$\Gamma^+(A \cap B)$ and $\Gamma^+(A) \cap \Gamma^+(B)$;

$\Gamma^+(\backslash A)$ and $\backslash\Gamma^+(A)$?

Analogously for Γ^-.

5.

Let $f : \mathbb{R} \to \mathbb{R}$ be a continuous function.

Draw the graph and check both lower and upper hemi-continuity of $\Gamma : \mathbb{R} \multimap \mathbb{R}$ defined by

a) $\Gamma(x) = \{y : f(x) \leq y\}$;

b) $\Gamma(x) = \{y : f(y) \leq x\}$;

c) $\Gamma(x) = \{y : f(x) \leq f(y)\}$;

d) $\Gamma(x) = \{y : f(x) < y\}$.