Seminar 1

Xiaoguang Ling

August 26. 2020

1 Jehle & Reny 1.8. Axioms of consumer choice

Sketch a map of indifference sets that are all **parallel**, **negatively sloped straight lines**, with **preference increasing north-easterly**.We know that preferences such as these satisfy Axioms 1, 2, 3, and 4.

Prove that they also satisfy Axiom 5'.

Prove that they do not satisfy Axiom 5.

```
\subsection{Axiom 1. Completeness}
\textbf{We can always choose}

$\forall \ x^1, x^2$ in $X$, we have: $x^1 \succsim  x^2$ or $x^2 \succsim  x^3$  or both

\subsection{Axiom 2. Transitivity}


\subsection{Axiom 3. Continuity}


\subsection{Axiom 4'. Local non-satiation}

\subsection{Axiom 4. Strict monotonicity}

\subsection{Axiom 5'. Convexity}

\subsection{Axiom 4. Strict convexity}
```

2 Jehle & Reny 1.9

Sketch a map of indifference sets that are **all parallel right angles that 'kink' on the line** $x_1 = x_2$. If **preference increases north-easterly**, these preferences will satisfy Axioms 1, 2, 3, and 4'.

Prove that they also satisfy Axiom 5'.

Do they satisfy Axiom 4?
Do they satisfy Axiom 5?

3 Jehle & Reny 1.13

A consumer has lexicographic preferences over $xR2$ if the relation satisfies x_1, x_2 whenever $x_1^1 > x_1^2$, or $x_1^1 = x_1^2$ and $x_1^1 \geq x_1^2$.

(a) Sketch an indifference map for these preferences.

(b) Can these preferences be represented by a continuous utility function? Why or why not?

4 Jehle & Reny 1.15

Prove that the budget set, B, is a **compact, convex set whenever** $p \gg 0$.

5 Jehle & Reny 1.26

A consumer of **two goods** faces **positive prices** and has a **positive income**. His utility function is

$$u(x_1, x_2) = x_1$$

Derive the Marshallian demand functions.

6 Jehle & Reny 1.27

A consumer of **two goods** faces **positive** prices and has a **positive income**. His utility function is

$$u(x_1, x_2) = max[ax_1, ax_2] + min[x_1, x_2], \quad where \ 0 < a < 1.$$

Derive the Marshallian demand functions.