1.2 Lecture 2: Preferences and Utility Functions

1.2.1 Consumer preferences

- Consumer choices are based on **preferences** and **budget constraints**
- To model consumer preferences, there are three assumptions:
  - **Completeness**: when comparing two bundles of goods, you either prefer one, prefer the other, or are indifferent
  - **Transitivity**: If consumer prefers bundle x to bundle y, and bundle y to bundle z, then must prefer bundle x to bundle z
  - **Non-Satiation**: More of a good is always better, consumers never get satiated

1.2.2 Indifference curves

- We use **indifference curves** as the basic graphical tool of consumer theory. There are four important properties of indifference curves:
  - Consumers prefer higher indifference curves
  - Indifference curves are downward-sloping
  - Indifference curves never cross
  - There is one indifference curve through each possible consumption bundle

1.2.3 Utility

- **Utility** is a way of mapping preferences. We use utility to get ordinal ranking, not cardinal ranking
- **Utility function** translates consumer utility from different consumption bundles into units, that can then be compared.
- **Marginal utility** is the derivative of utility with respect to good. It measures how utility changes as consumers consume more of a good. The important principle of **diminishing marginal utility** states that consumers receive less utility from each unit of a good they consume.
- The slope of the indifference curve is called the **marginal rate of substitution (MRS)**.
  - marginal rate of substitution (MRS) = rate at which consumers are willing to trade Y axis for X axis
  - $$MRS = -\frac{MU_x}{MU_y} = -\frac{\delta U/\delta x}{\delta U/\delta y}$$
  - MRS is the ratio of marginal utilities
  - MRS is diminishing as you move along the indifference curve

1.2.4 TO KNOW – Graphical and Math Understanding

- Prove that indifference curves never cross using a figure
- Prove that indifference curves are downward sloping using a figure
- Draw indifference curves corresponding to perfect complements and perfect substitutes
- Know how to sketch an indifference curve given a verbal description of a consumer's preferences
- Calculate marginal utilities given a utility function
- Calculate marginal rate of substitution given a utility function

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