

Chapter Three

- Preferences

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Tools to Describe Preferences

- An individual's demand is constructed by
 - Taking given prices
 - Figuring out what quantities the consumer will choose
- Consumer choice depends on which bundles he prefers over which other bundles
- A formal description of his preference over bundles is, therefore, necessary

Preference Relations

- Comparing two different consumption bundles, x and y :
 - **strict preference**: x is more preferred than y .
 - **weak preference**: x is at least as preferred as y .
 - **indifference**: x is exactly as preferred as y .
- They are **ordinal** relations; *i.e.* they state only the **order** in which bundles are preferred.

Preference Relations

- \succ denotes strict preference so $x \succ y$ means that bundle x is preferred strictly to bundle y .
- \sim denotes indifference; $x \sim y$ means x and y are equally preferred.
- \succsim denotes weak preference; $x \succsim y$ means x is preferred at least as much as y .

Preference Relations

- $x \succsim y$ and $y \succsim x$ imply $x \sim y$.
- $x \succsim y$ and (not $y \succsim x$) imply $x \succ y$.

Assumptions about Preference Relations

- **Completeness:** For any two bundles x and y it is always possible to make the statement that either

$$x \succsim y$$

or

$$y \succsim x.$$

Assumptions about Preference Relations

- **Reflexivity:** Any bundle x is always at least as preferred as itself; *i.e.*

$$x \succsim x.$$

Assumptions about Preference Relations

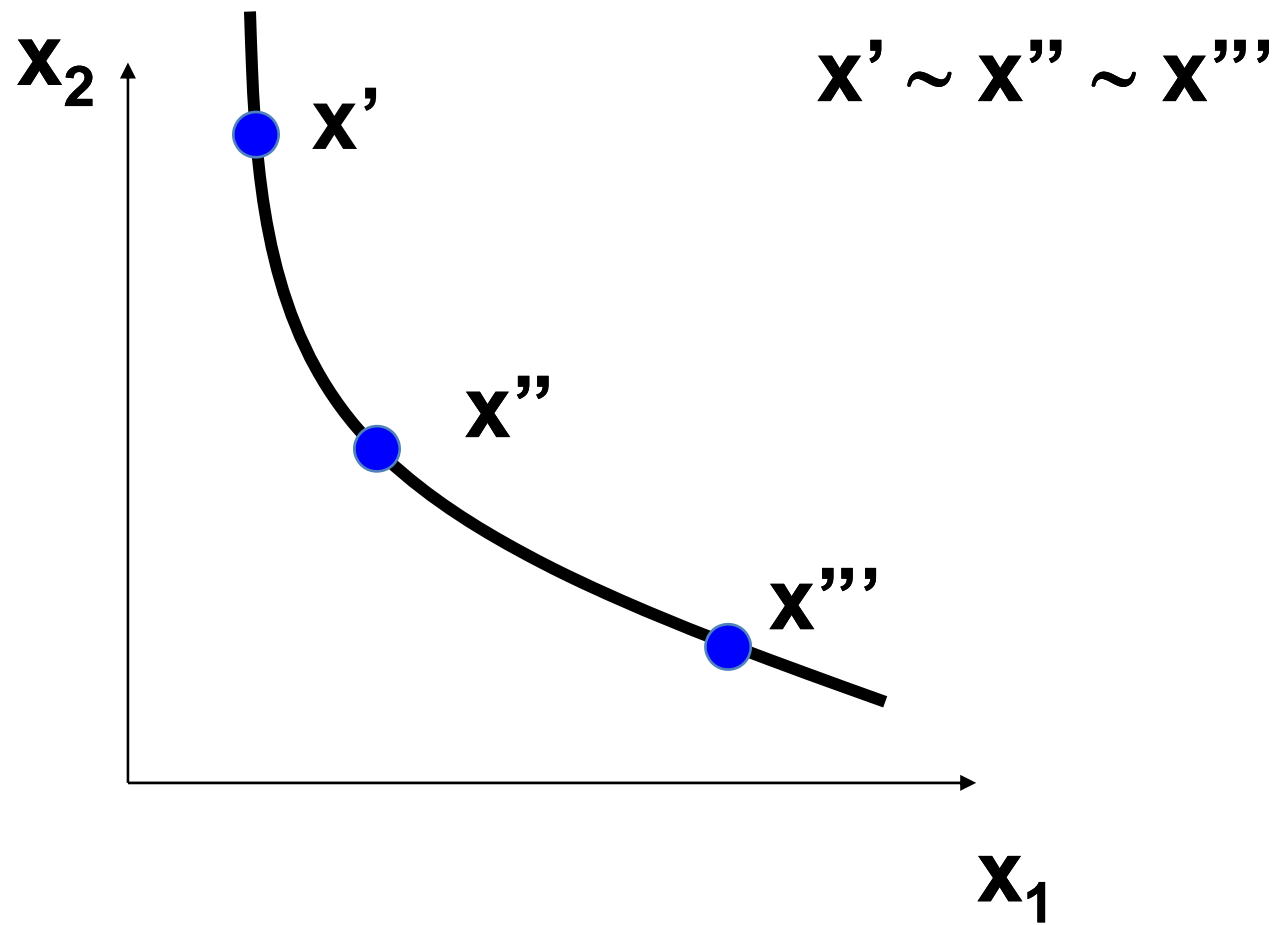
- **Transitivity:** If
x is at least as preferred as y, and
y is at least as preferred as z, then
x is at least as preferred as z; *i.e.*

$$x \succsim y \text{ and } y \succsim z \Rightarrow x \succsim z.$$

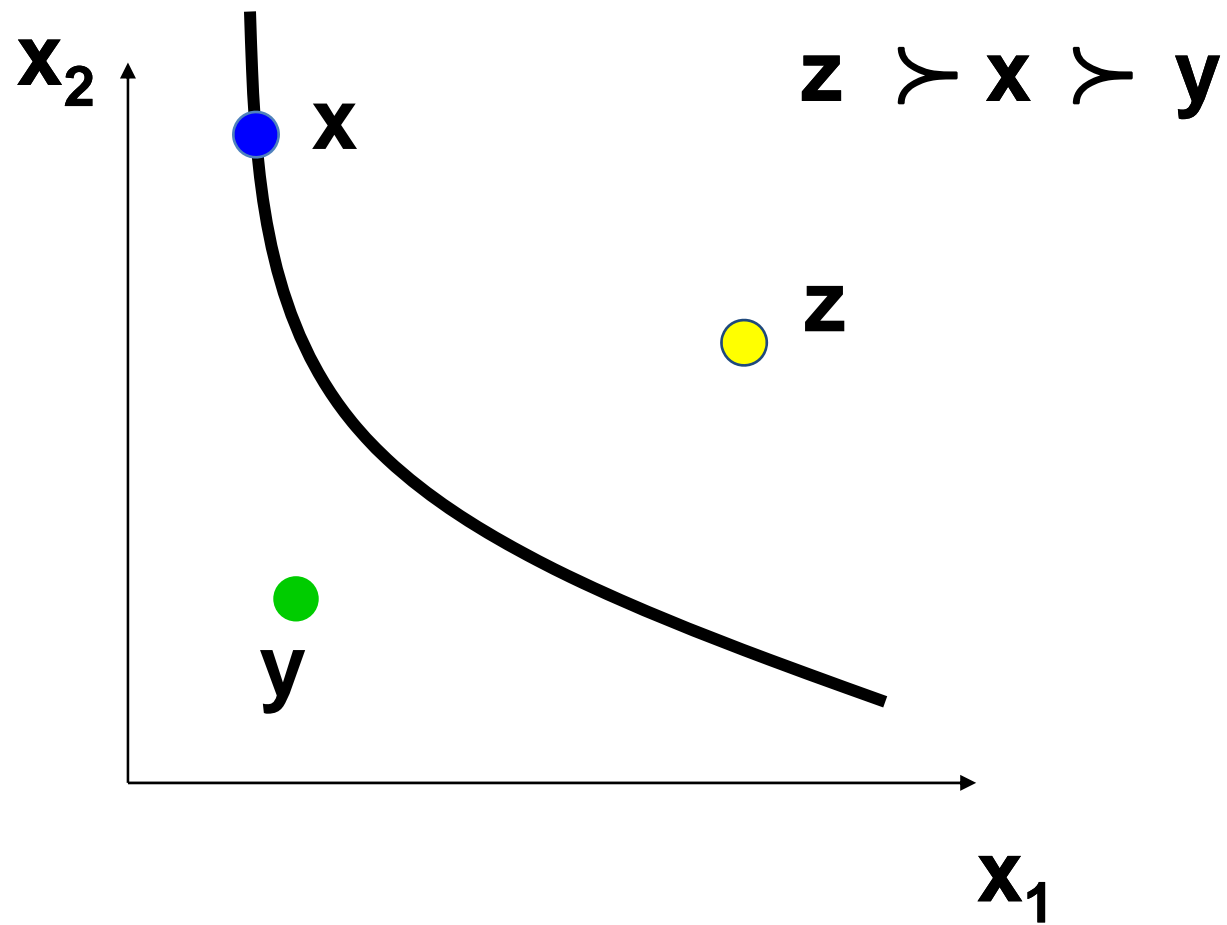
Indifference Curves

- Take a reference bundle x' . The set of all bundles equally preferred to x' is the **indifference curve containing x'** ; the set of all bundles $y \sim x'$.
- Since an indifference “curve” is not always a curve a better name might be an indifference “set”.

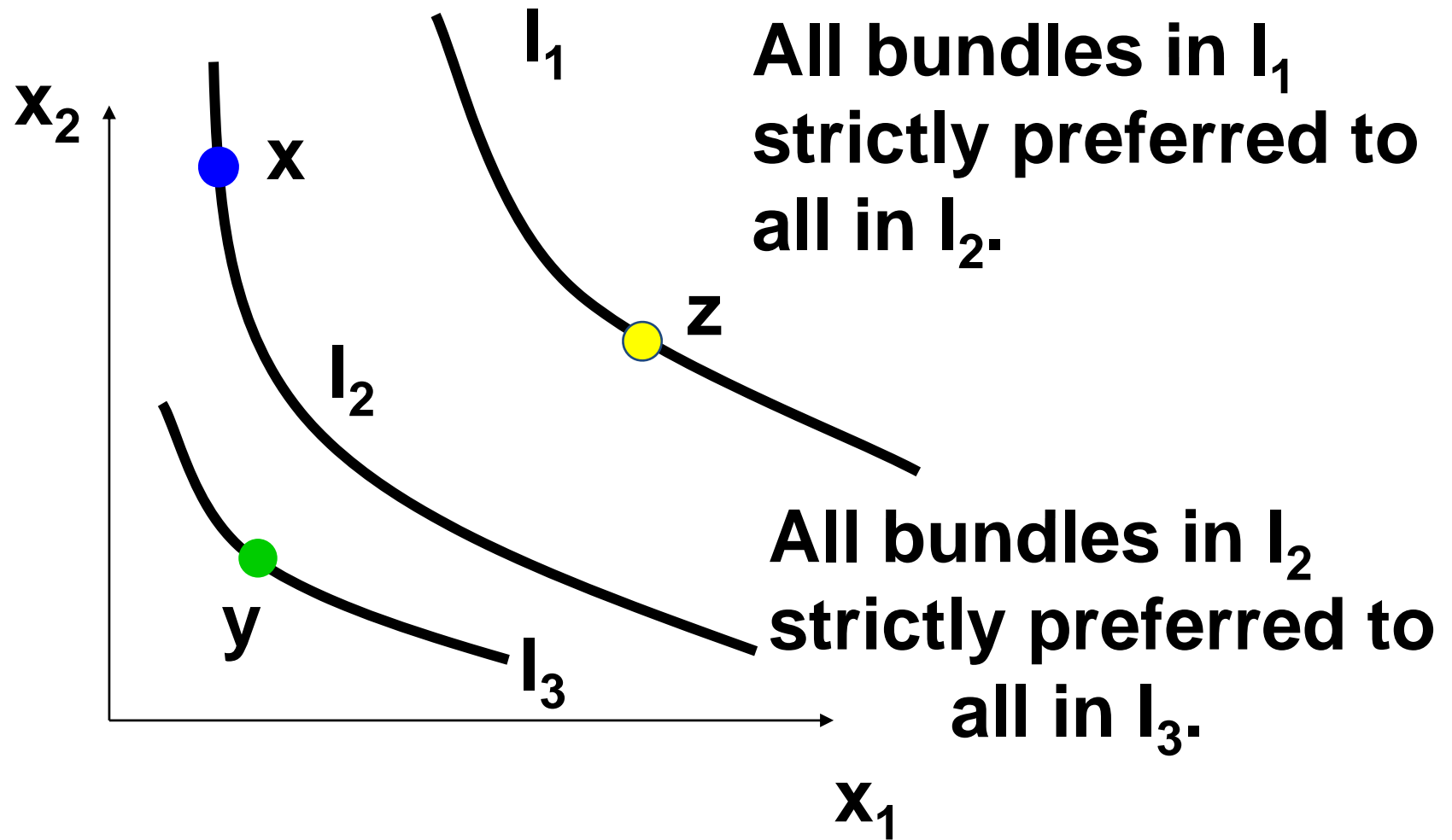
Indifference Curves



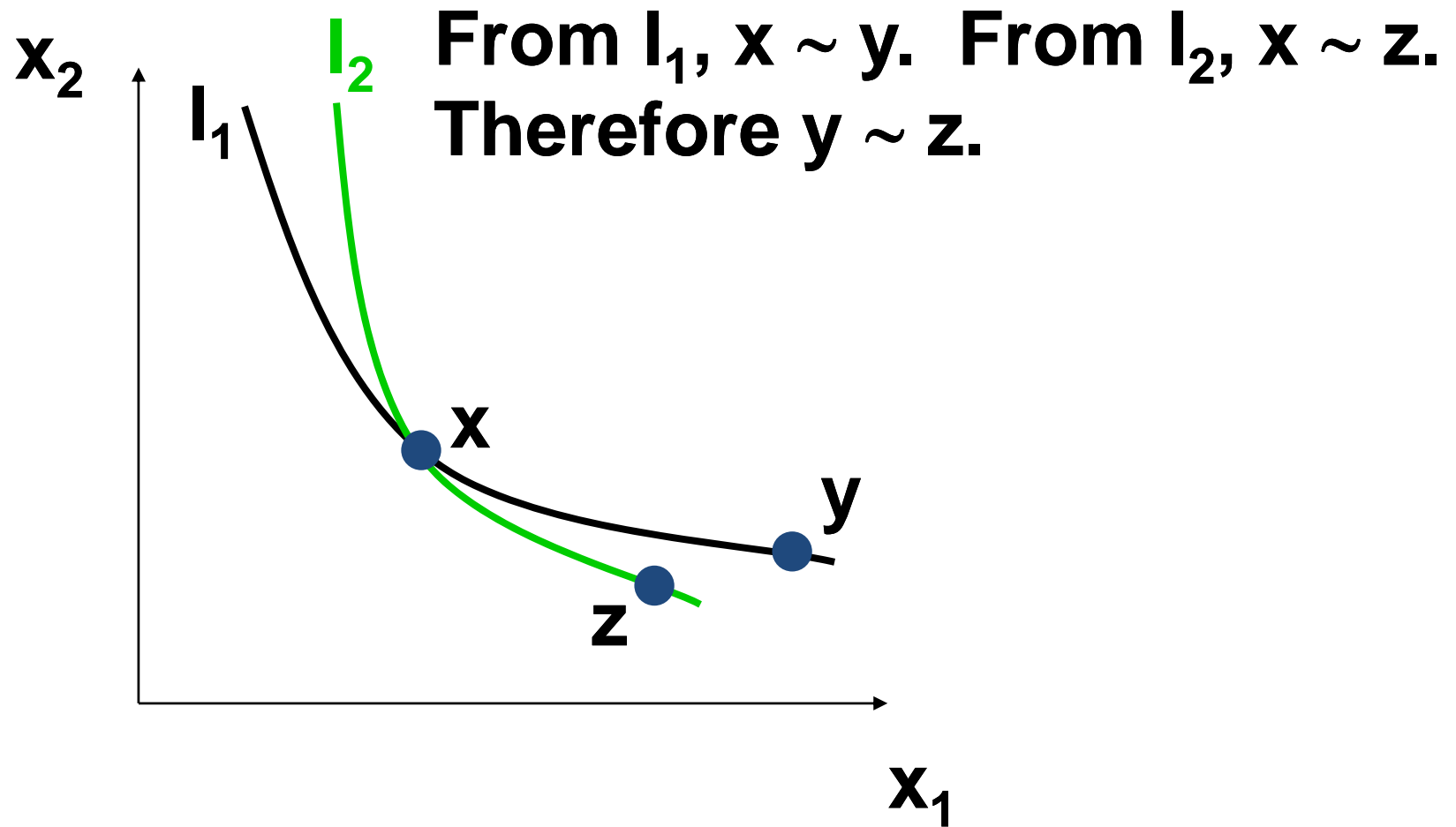
Indifference Curves



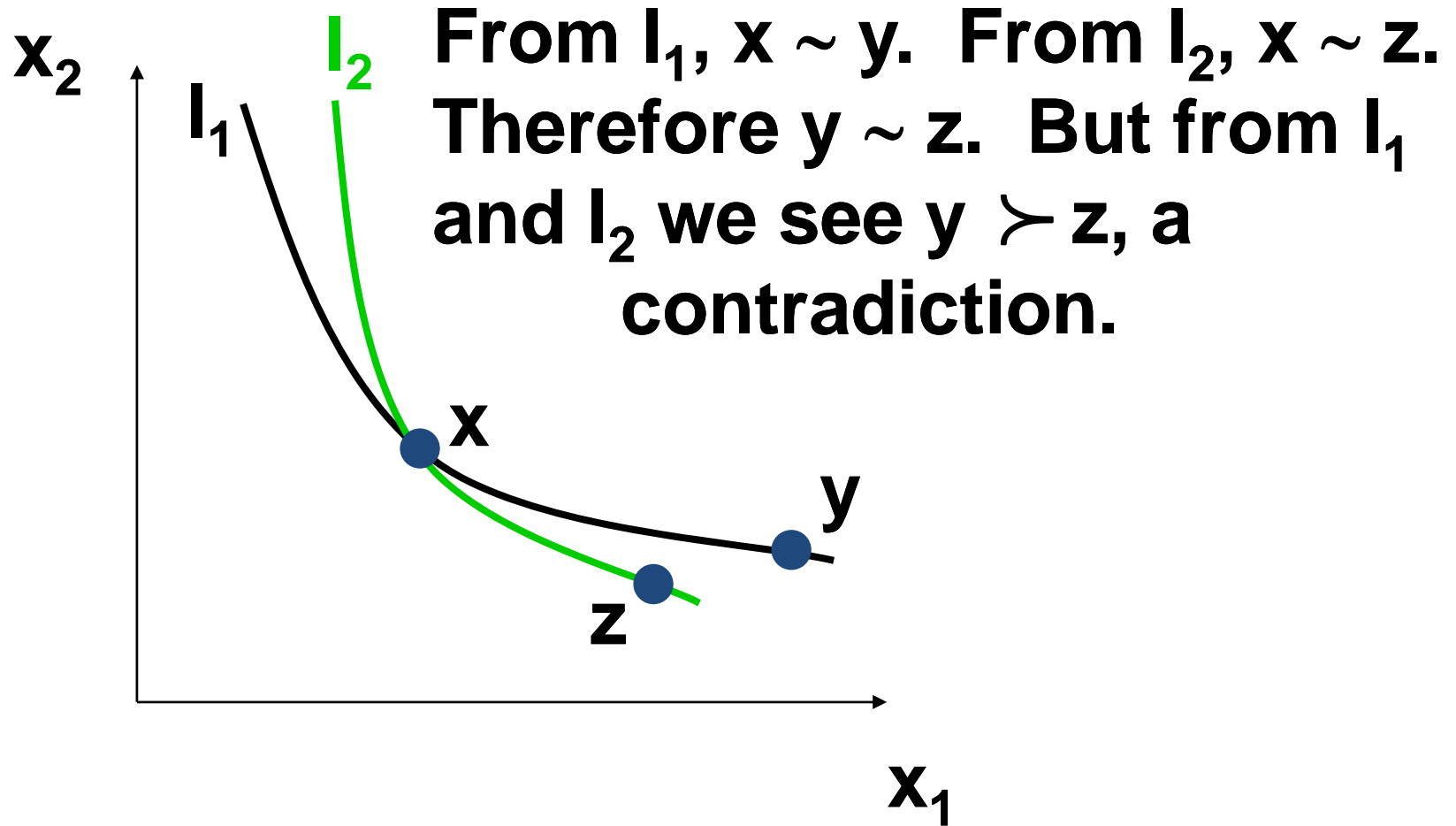
Indifference Curves



Indifference Curves Cannot Intersect



Indifference Curves Cannot Intersect

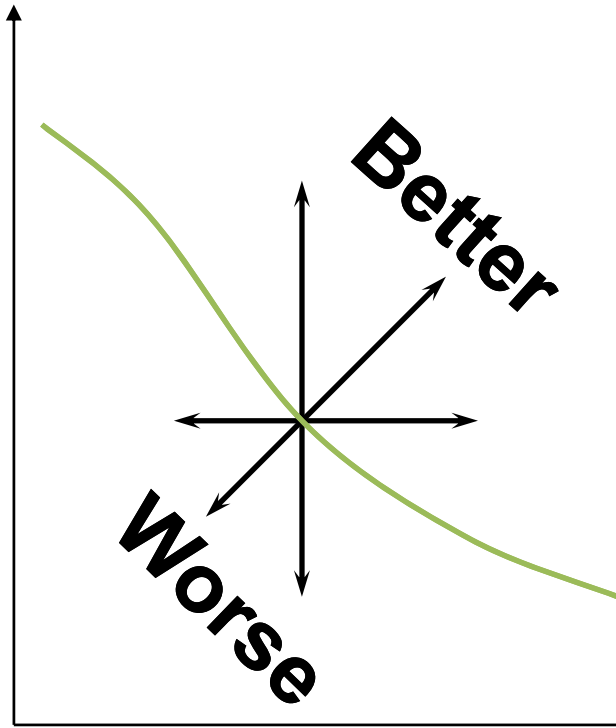


Slopes of Indifference Curves

- When more of a commodity is always preferred, the commodity is a **good**.
- If every commodity is a good then indifference curves are negatively sloped.

Slopes of Indifference Curves

Good 2



**Two goods ➡
a negatively sloped
indifference curve.**

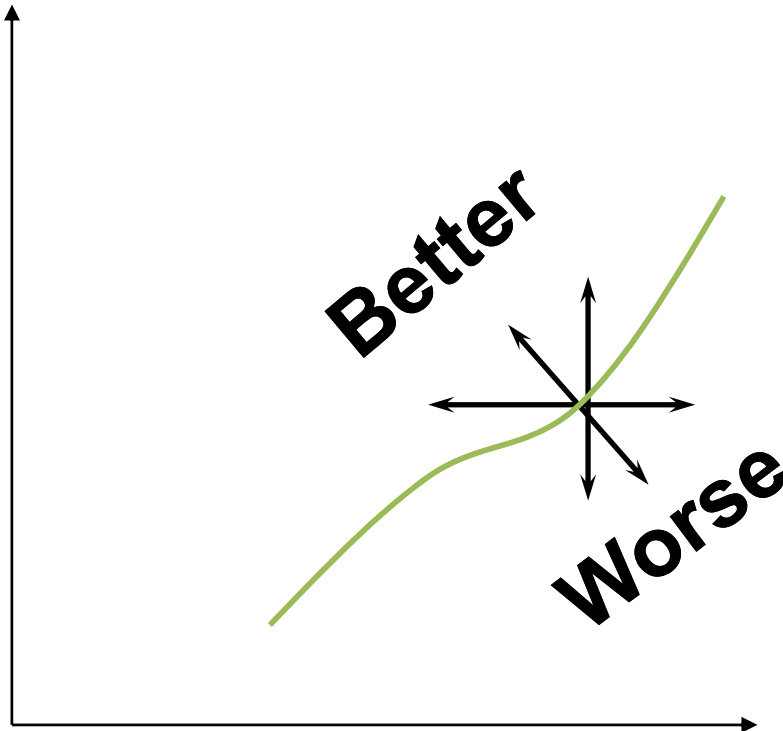
Good 1

Slopes of Indifference Curves

- If less of a commodity is always preferred then the commodity is a **bad**.

Slopes of Indifference Curves

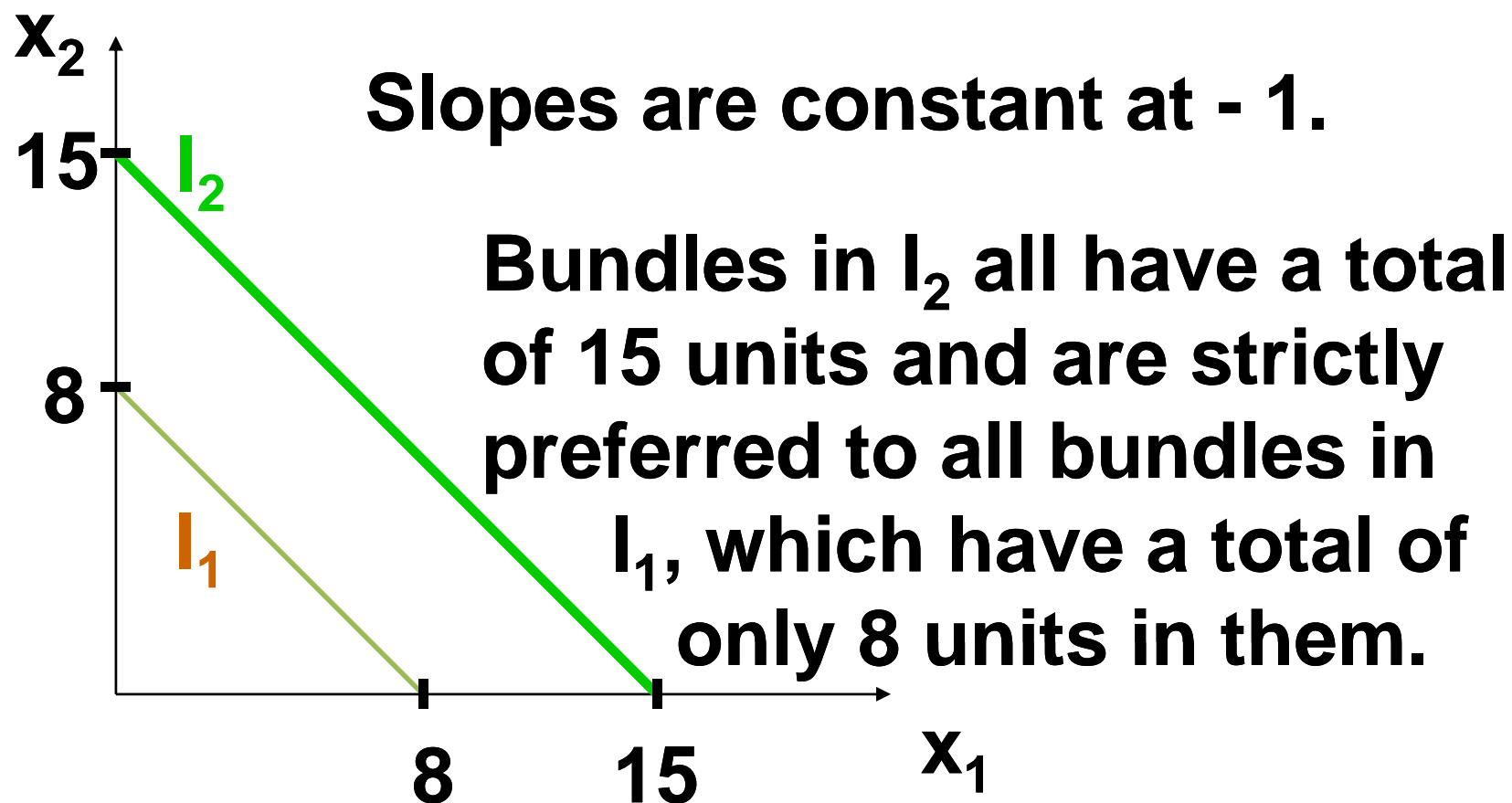
Good 2



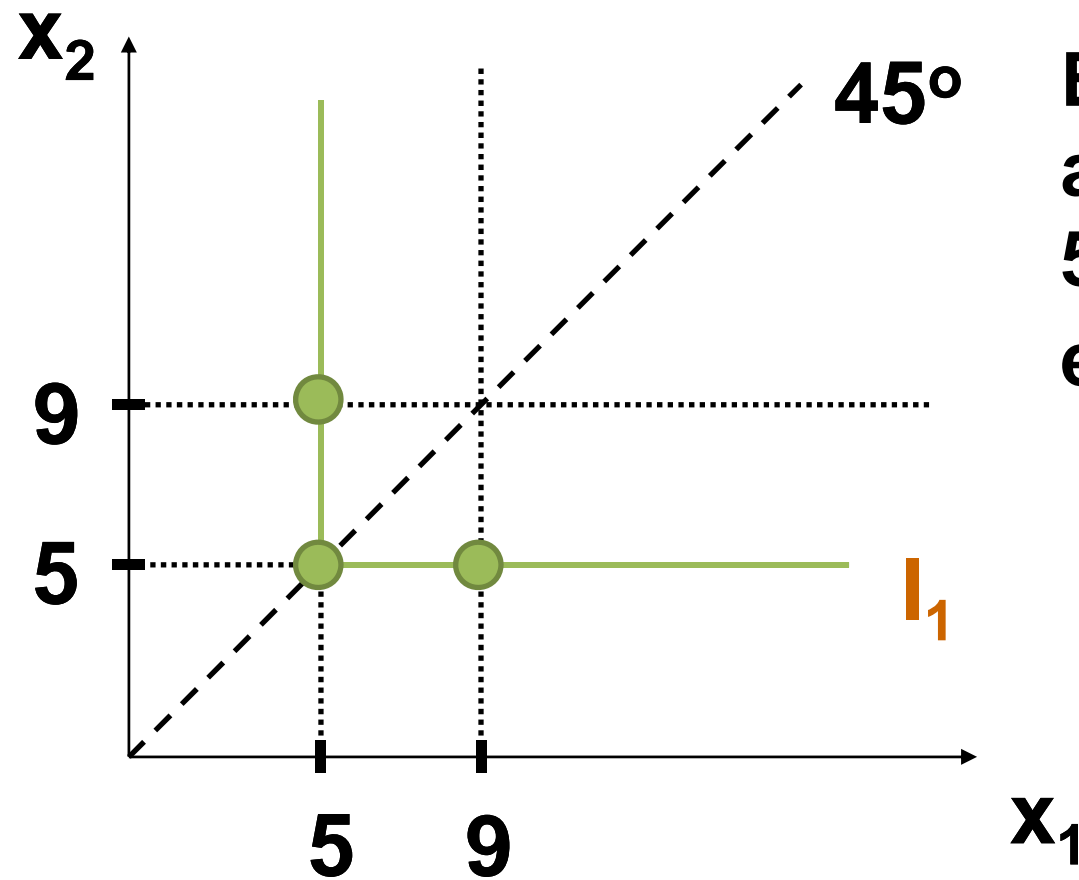
One good and one bad ➡ a positively sloped indifference curve.

Bad 1

Extreme Cases of Indifference Curves; Perfect Substitutes

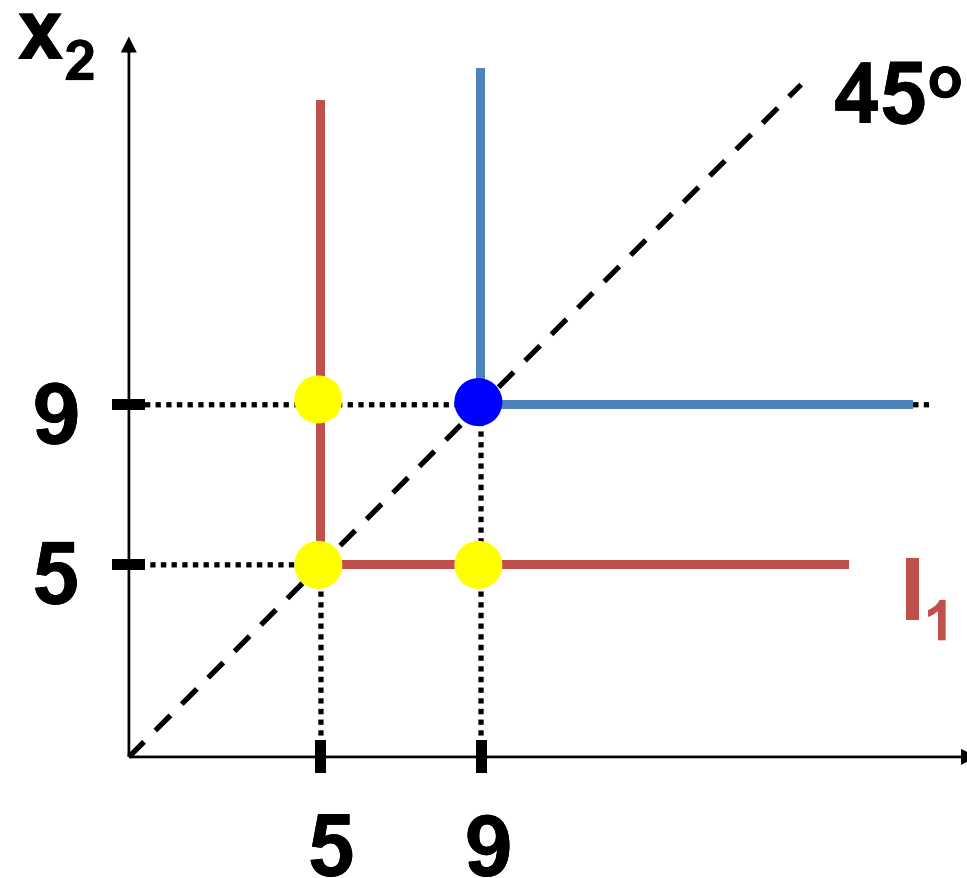


Extreme Cases of Indifference Curves; Perfect Complements



Each of $(5,5)$, $(5,9)$ and $(9,5)$ contains 5 pairs so each is equally preferred.

Extreme Cases of Indifference Curves; Perfect Complements



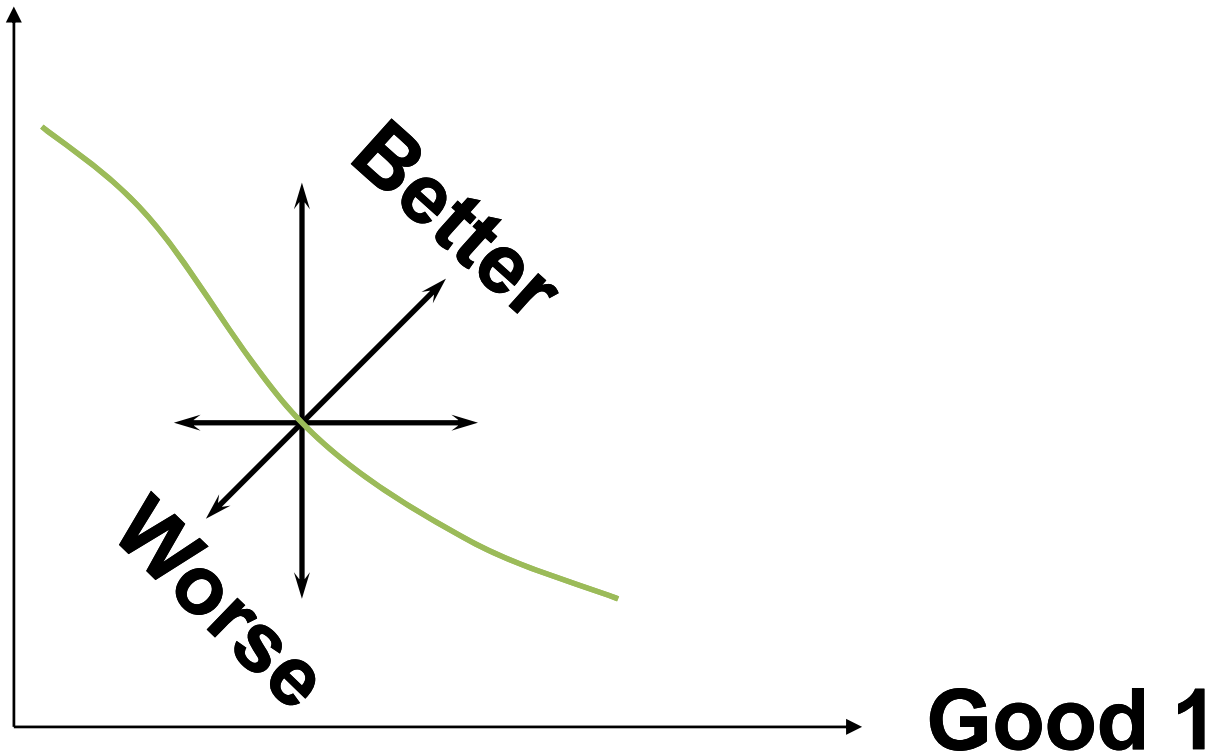
Since each of $(5,5)$, $(5,9)$ and $(9,5)$ contains 5 pairs, each is less preferred than the bundle $(9,9)$ which contains 9 pairs.

Well-Behaved Preferences

- A preference relation is “well-behaved” if it is
 - monotonic and convex.
- **Monotonicity**: More of any commodity is always preferred (*i.e.* no satiation and every commodity is a good).

More is better

Good 2



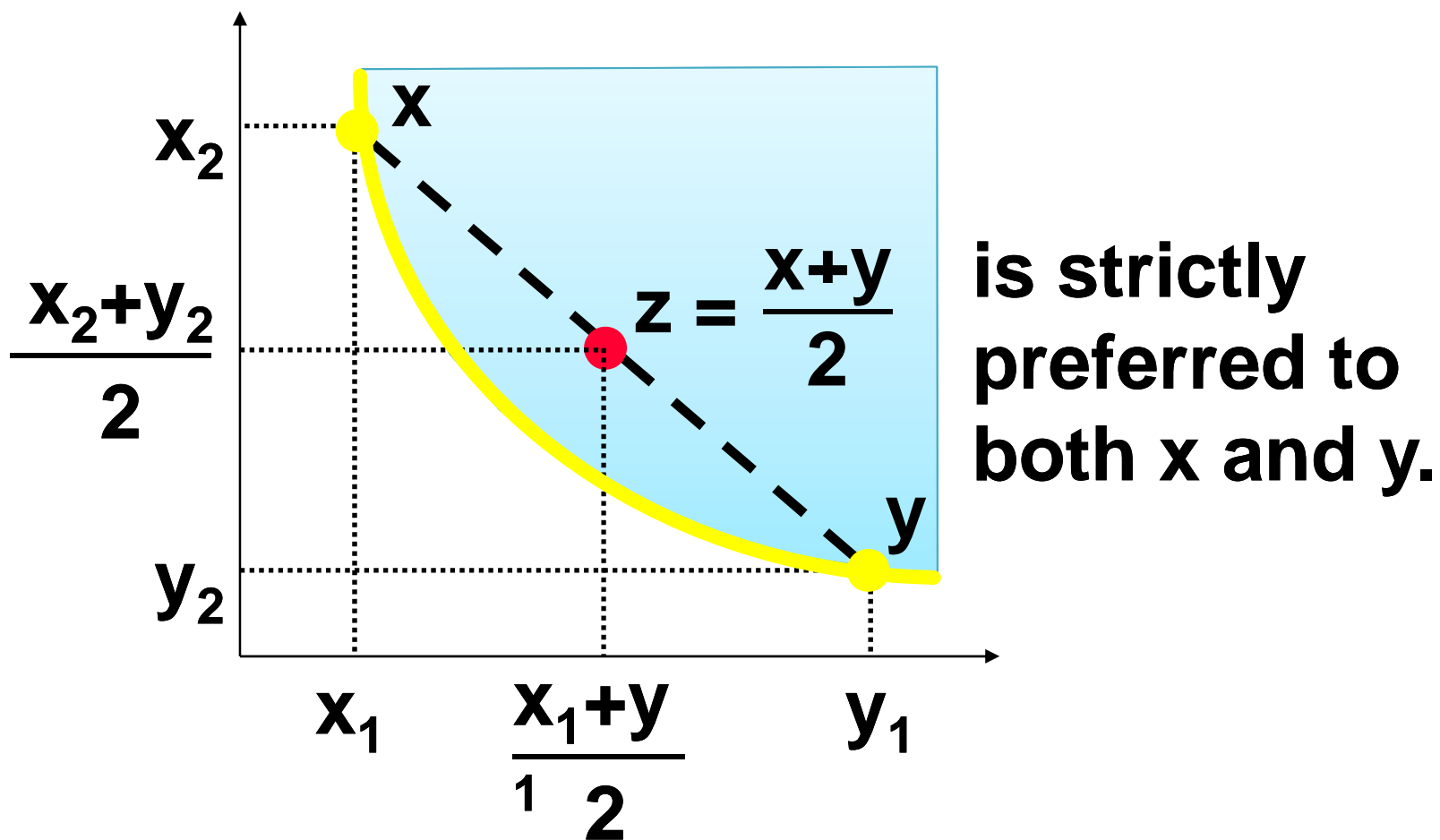
Well-Behaved Preferences

- **Convexity:** Mixtures of bundles are (at least weakly) preferred to the bundles themselves. E.g., the 50-50 mixture of the bundles x and y is

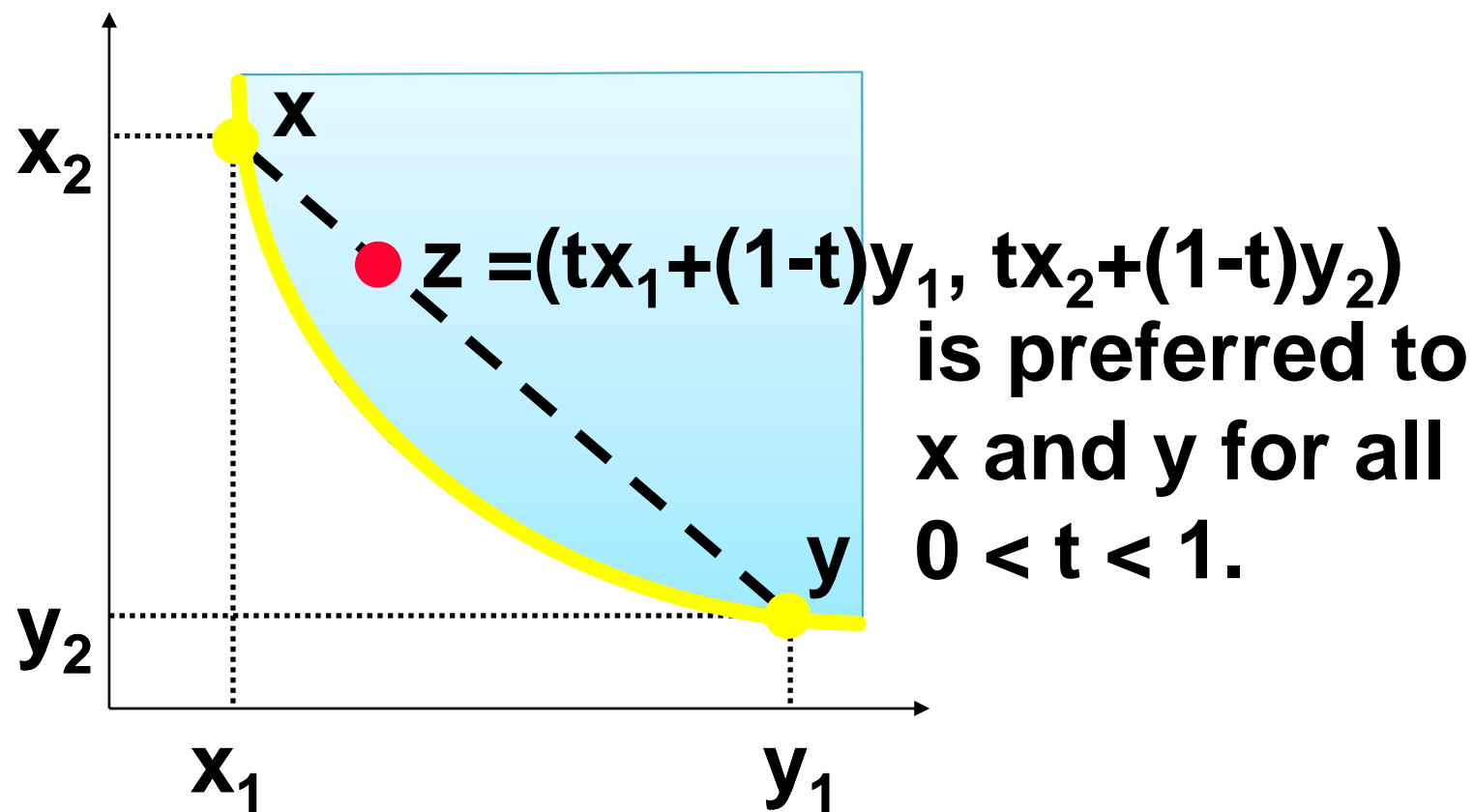
$$z = (0.5)x + (0.5)y.$$

z is at least as preferred as x or y .

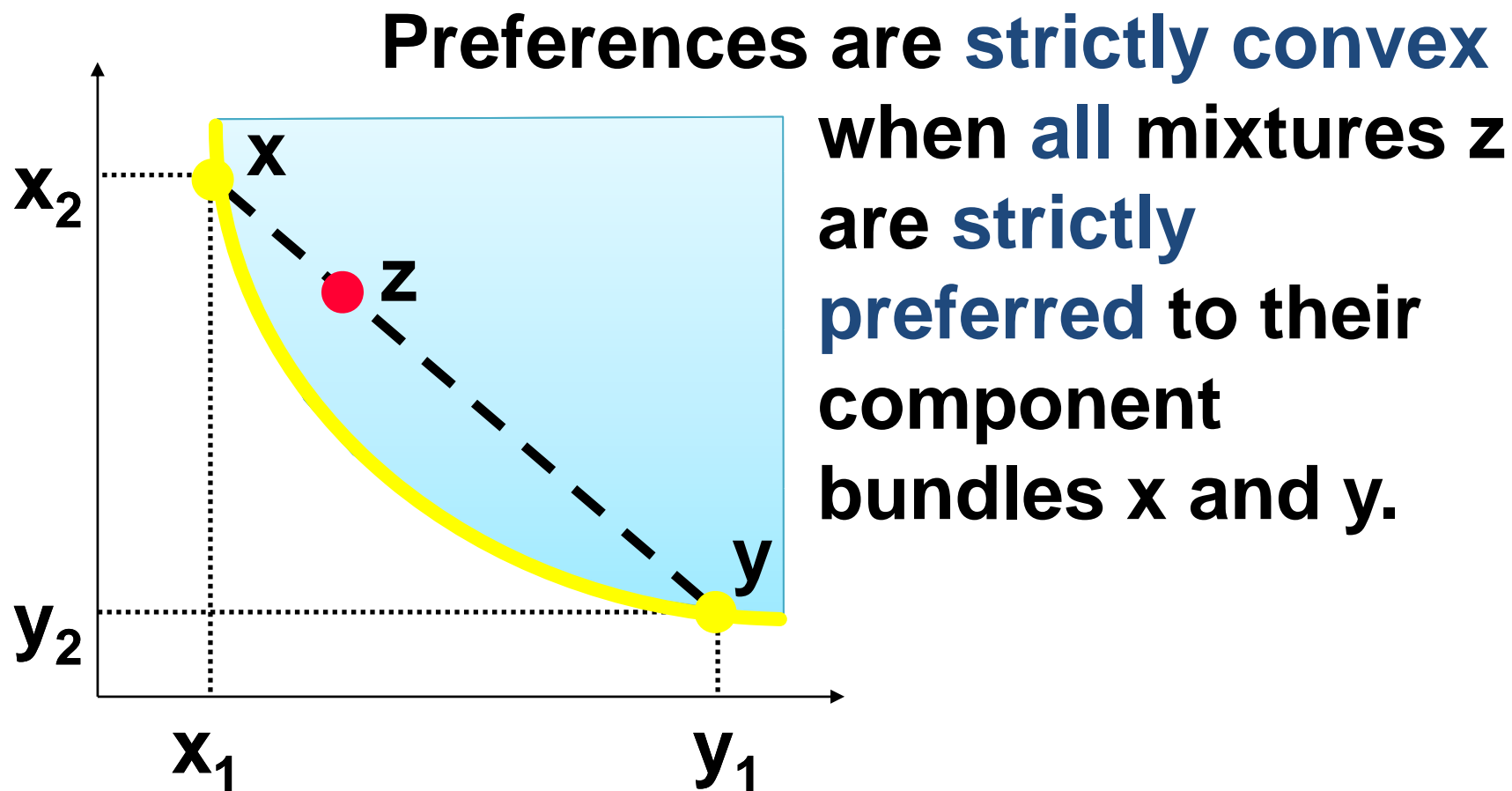
Well-Behaved Preferences -- Convexity.



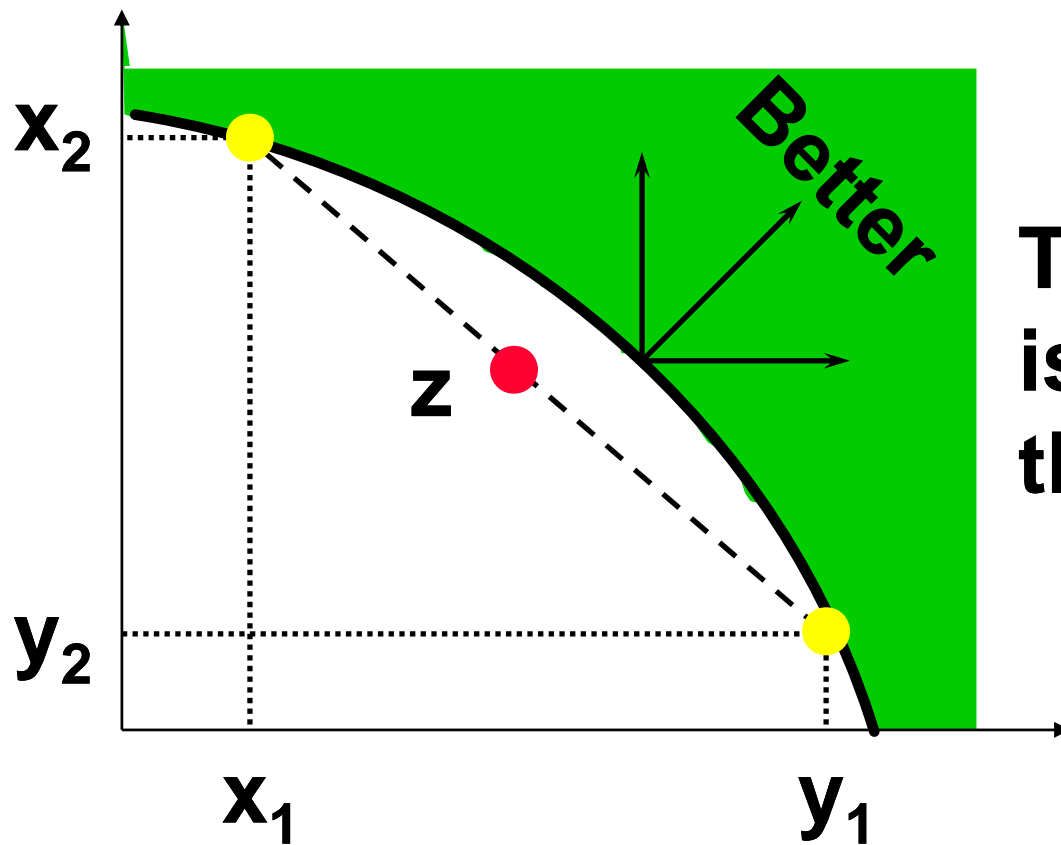
Well-Behaved Preferences -- Convexity.



Well-Behaved Preferences -- Convexity.

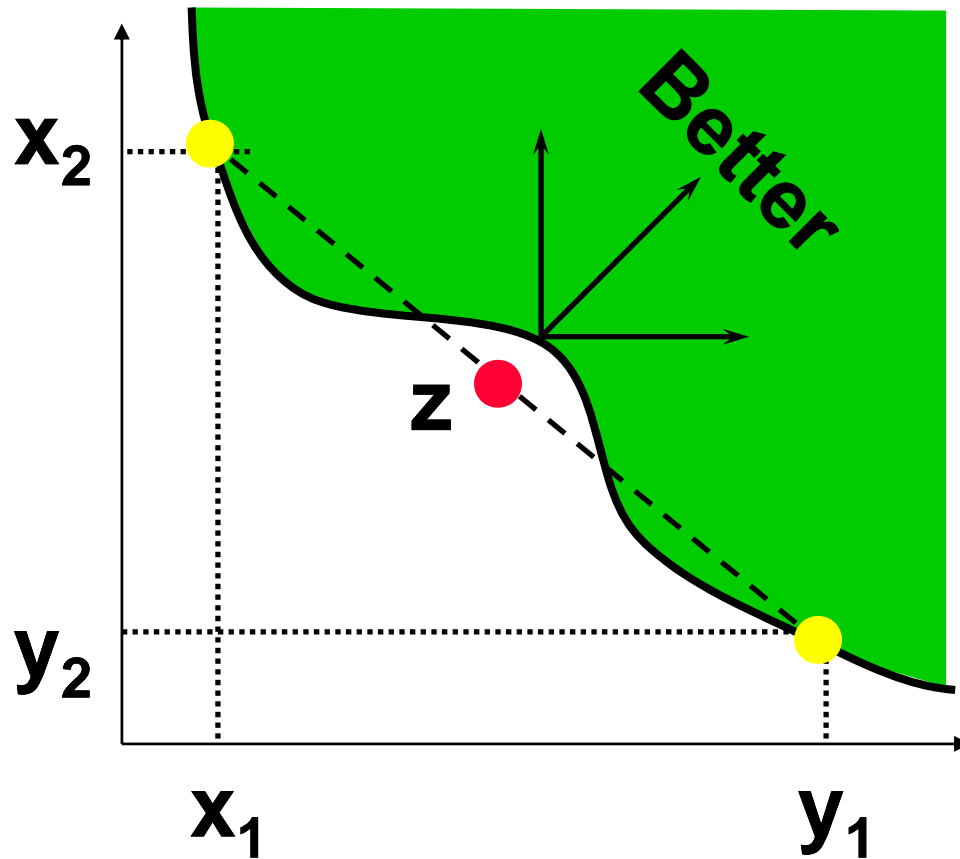


Non-Convex Preferences



The mixture z is less preferred than x or y .

More Non-Convex Preferences

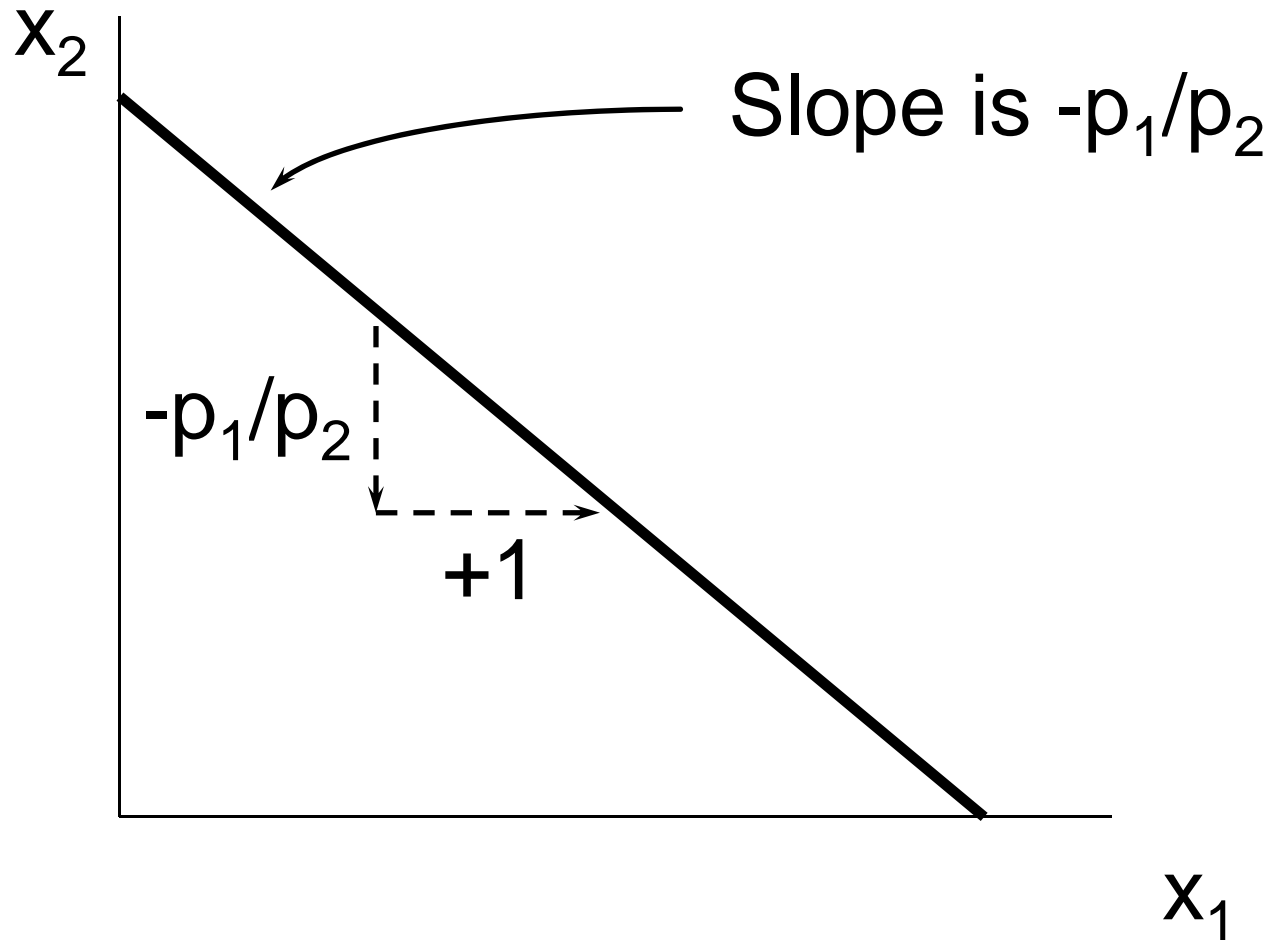


The mixture z is less preferred than x or y .

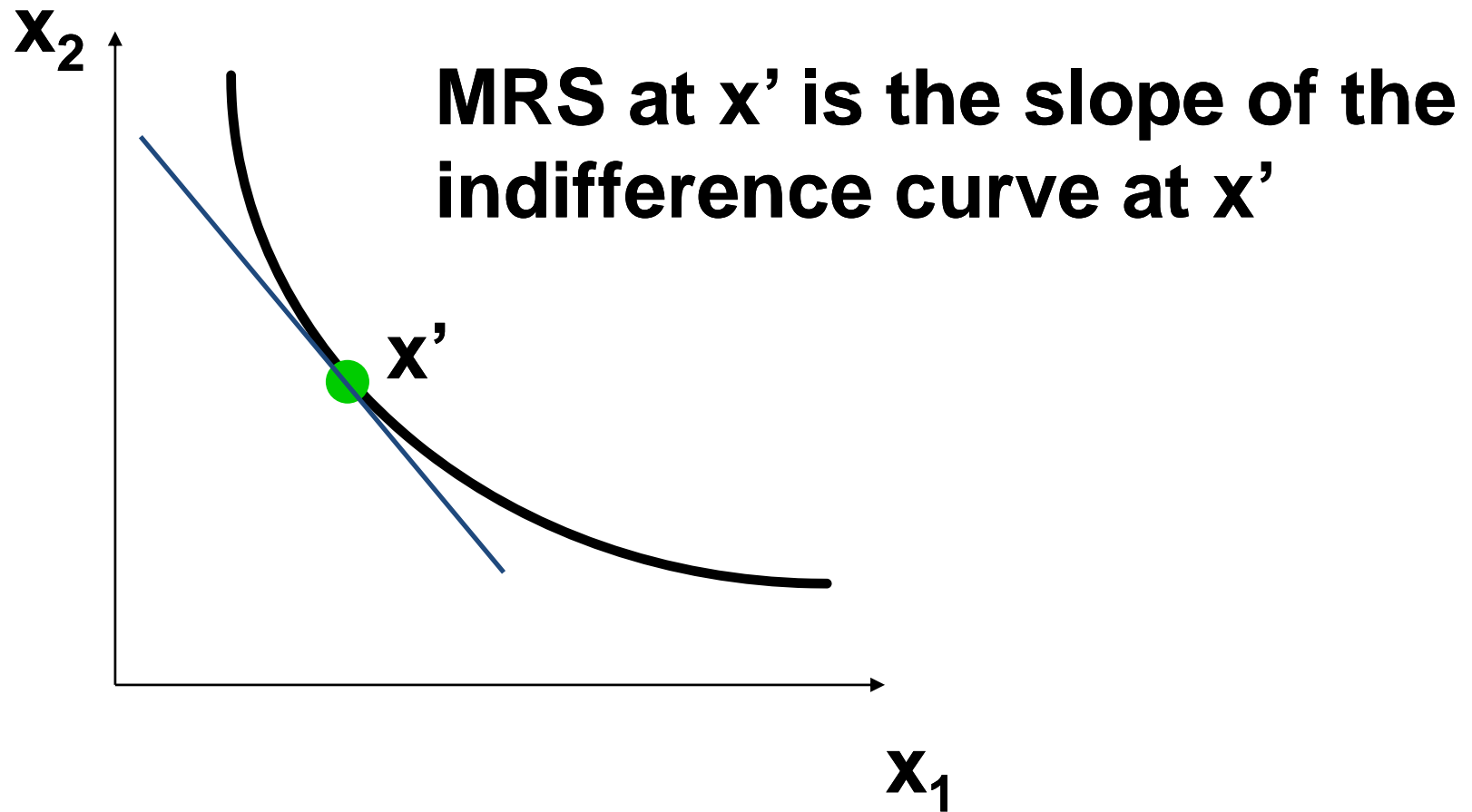
Slopes of Indifference Curves

- The slope of an indifference curve is its marginal rate-of-substitution (MRS).
- How can a MRS be calculated?

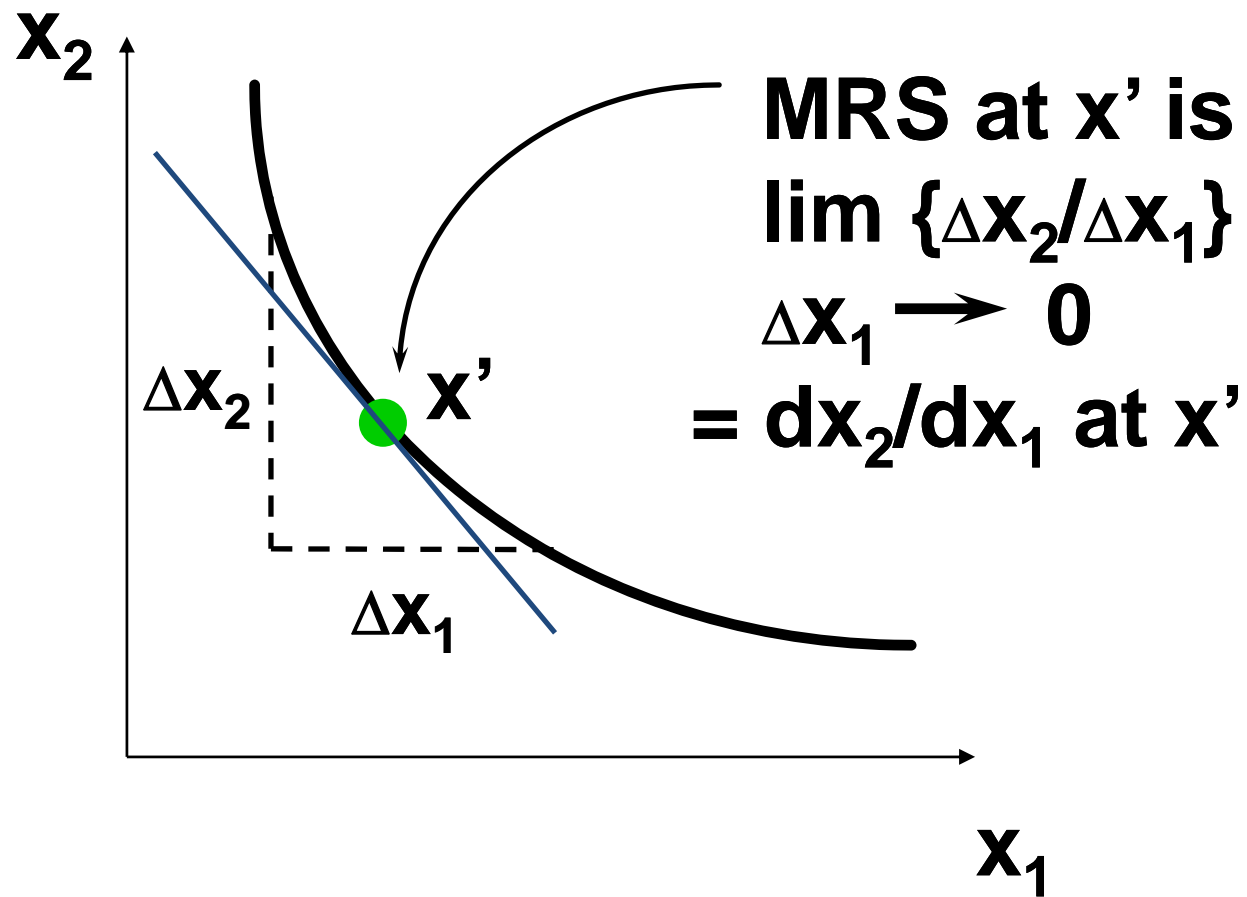
Understanding Budget Constraint



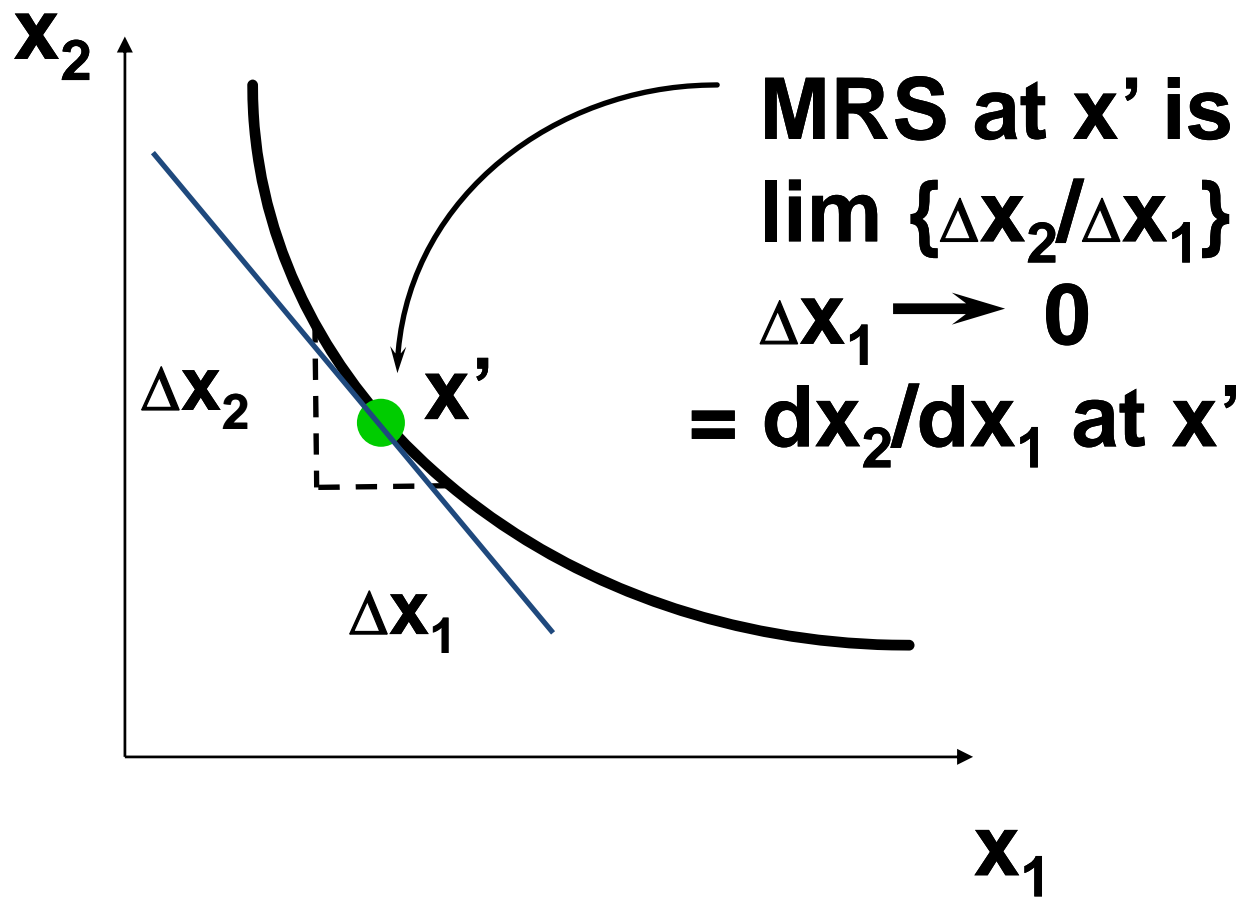
Marginal Rate of Substitution



Marginal Rate of Substitution

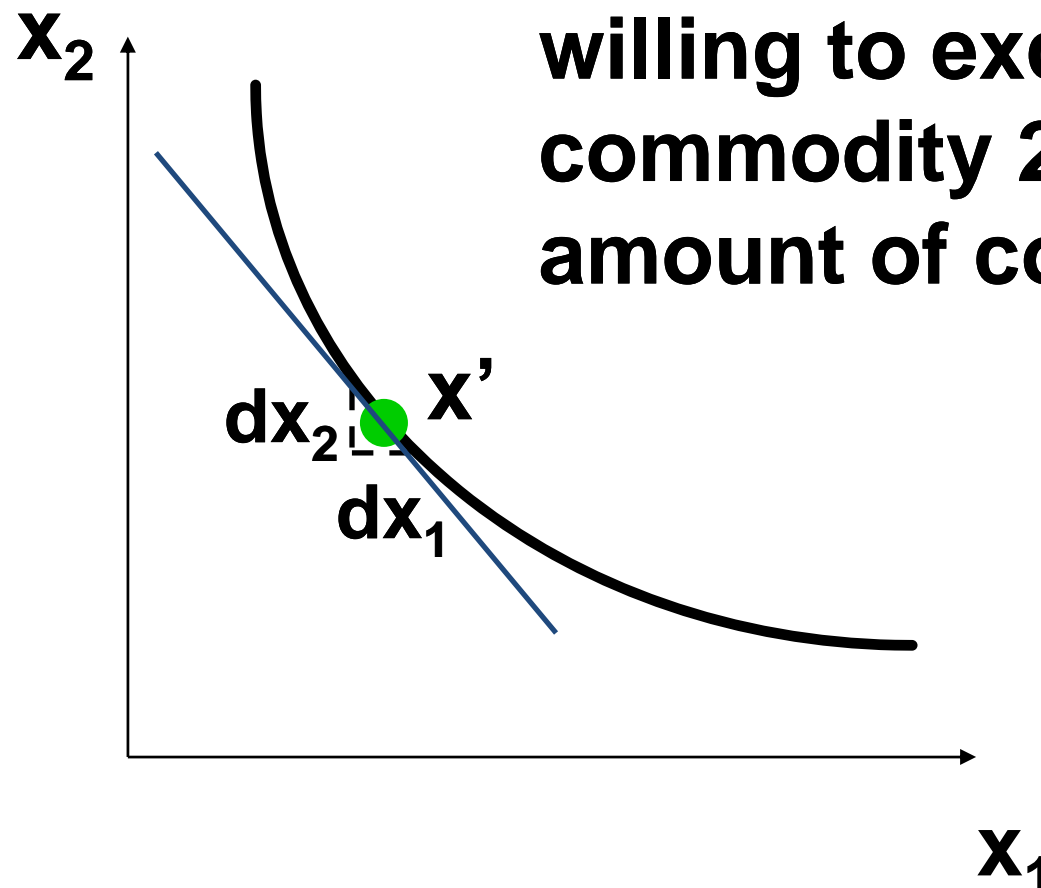


Marginal Rate of Substitution



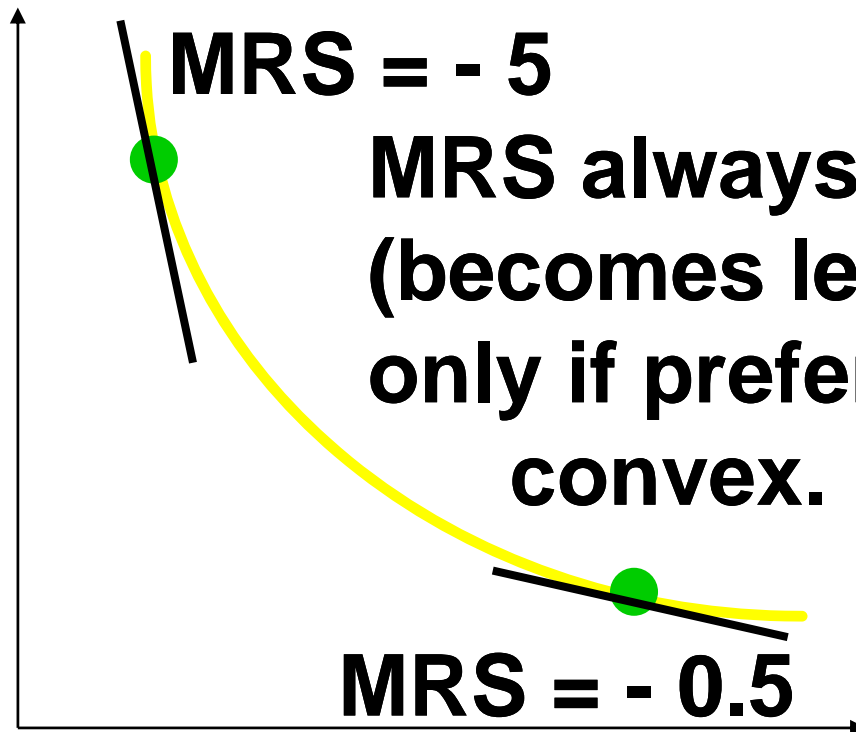
Marginal Rate of Substitution

**$dx_2 = \text{MRS} \times dx_1$ so, at x' ,
MRS is the rate at which
the consumer is only just
willing to exchange
commodity 2 for a small
amount of commodity 1.**



MRS & Ind. Curve Properties

Good 2



Good 1

Next Lecture

$$MRS = \frac{dx_2}{dx_1} = - \frac{\partial U / \partial x_1}{\partial U / \partial x_2}$$