

Exercise walk-through

Indifference curves and budget lines ■ 7.2

eXercise

You must be able to

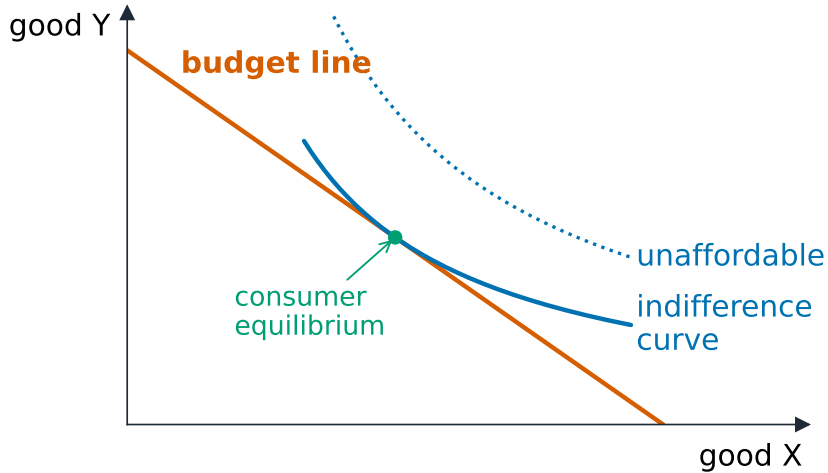
- draw an indifference curve and a budget line
- find consumer equilibrium (tangency)
- explain the income and substitution effects (normal, inferior, Giffen goods)

Method — Consumer equilibrium

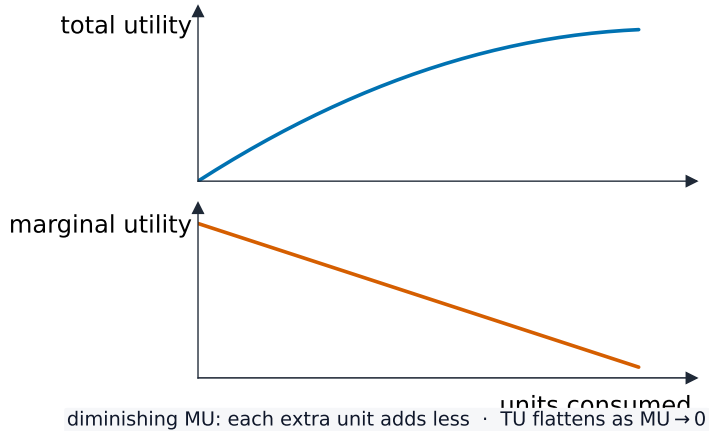
- **Indifference curve** 无差异曲线: combinations giving the **same** utility (slopes down, bows in).
- **Budget line** 预算线: combinations just affordable; **equilibrium** at the tangency point.
- A price fall raises quantity via two effects: **substitution effect** 替代效应 (switch to the cheaper good) + **income effect** 收入效应 (real income rises).
- **Giffen good** 吉芬品: a strong negative income effect $\rightarrow$ demand rises as price rises.

Answer shapes: an **Explain [up to 8]** answer may use an indifference diagram (AO3); **Discuss [12]** adds a judgement (AO4).

Method — Consumer equilibrium



Method — Consumer equilibrium



Total utility rises but flattens as marginal utility falls

Practice 2.1 ■ 2 marks

Define the term *indifference curve*.

Solution 2.1

Method: Consumer equilibrium

Worked steps

a curve showing all combinations of two goods that give a consumer the same total utility (2 for a clear definition; 1 for a partial idea).

Practice 2.2 ■ 1 mark

State where **consumer equilibrium** occurs on an indifference diagram.

Solution 2.2

Method: Consumer equilibrium

Worked steps

where the budget line is tangent to the highest reachable indifference curve (1).

Practice 2.3 ■ 2 marks

State the difference between the income effect and the substitution effect.

Solution 2.3

Method: Consumer equilibrium

Worked steps

the substitution effect is the change in quantity from a good becoming relatively cheaper; the income effect is the change from the consumer's real income rising (2 for a clear difference; 1 for a partial idea).

Exam-style 3.1 ■ 1 mark

Consumer equilibrium occurs where the budget line is:

- A** above the highest indifference curve
- B** tangent to the highest reachable indifference curve
- C** parallel to the indifference curve
- D** at the origin

Solution 3.1

Method: Consumer equilibrium

- A above the highest indifference curve
- B tangent to the highest reachable indifference curve** 
- C parallel to the indifference curve
- D at the origin

Worked steps

B. Equilibrium is at the tangency with the highest reachable indifference curve.

Exam-style 3.2 ■ 8 marks

Using an indifference-curve diagram, explain how a consumer reaches equilibrium.

Solution 3.2

Method: Consumer equilibrium

Worked steps

[8] AO1 1 + **AO3 diagram up to 4** (budget line, indifference map, tangency) + AO2/AO3 up to 3 — the consumer wants the highest utility they can afford → they reach the highest indifference curve the budget line touches → at the tangency the slope of the budget line equals the slope of the indifference curve (the marginal rate of substitution equals the price ratio).

Exam-style 3.3 ■ 8 marks

Explain, using income and substitution effects, why the demand for a Giffen good slopes upward.

Solution 3.3

Method: Consumer equilibrium

Worked steps

[8] AO1 1 + AO3 up to 7 — when a Giffen good's price falls, the substitution effect raises quantity, but it is a very inferior good, so the income effect (higher real income → buy less of it) is **stronger** and works the opposite way → the net effect is that quantity demanded falls as price falls → demand slopes upward.