

Microeconomics, Module 4: Consumers in the Marketplace (chapter 4)

Illustrative Test Questions

(The attached PDF file has better formatting.)

Question 4.1: Slope of Budget Line

The slope of the budget line changes, with the vertical intercept remaining fixed, when

- A. The consumer's income increases
- B. The consumer's income decreases
- C. The price of the good on the horizontal axis changes
- D. The price of the good on the vertical axis changes
- E. The consumer's tastes change

Answer 4.1: C

Statements A and B: If the consumer's income increases, the budget line moves outward; if the consumer's income decreases, the budget line moves inward. The slope of the budget line stays the same.

Statements C and D: If the relative prices of the two goods change, the slope of the budget line changes. Suppose the two goods are bread (horizontal axis) and wine (vertical axis), and their prices are \$1.50 per loaf and \$6.00 per flask. If income is \$30, the intercepts are

- Horizontal axis: 20 loaves of bread
- Vertical axis: 5 flasks of wine

We examine price changes:

- If the price of wine changes to \$5.00 a flask, the vertical intercept becomes 6 flasks.
- If the price of bread becomes \$2.00 a loaf, the horizontal intercept becomes 15 loaves.

Question: We said in the previous modules that prices are in real terms: bread in terms of wine and wine in terms of bread. If the price of bread in terms of wine changes, the price of wine in terms of bread changes.

Answer: The budget line uses income in dollars, which is a monetary variable, not a real variable. The question assumes that the nominal dollars of income do not change. We use this format because Landsburg uses it, though it is not ideal. In truth, the relative values of both bread and wine change, and real income changes as well.

Question 4.2: Steepness of Budget Line

The budget line becomes steeper when

- A. The consumer's income increases
- B. The consumer's income decreases
- C. The price of the good on the horizontal axis increases
- D. The price of the good on the vertical axis increases
- E. The consumer's tastes change

Answer 4.2: C

Question 4.3: Steepness of Budget Line

The budget line becomes steeper when

- A. The consumer's income increases
- B. The consumer's income decreases
- C. The price of the good on the horizontal axis decreases
- D. The price of the good on the vertical axis decreases
- E. The consumer's tastes change

Answer 4.3: D

Question: When the relative price of X in terms of Y changes, the relative price of Y in terms of X changes. These two questions are identical.

Answer: That is correct. We use this format because Landsburg does.

Question: What happens when the consumer's tastes change?

Answer: The consumer's tastes affect the indifference curve, not the budget line.

Question 4.4: Budget Line and Inflation

If the consumer's income and all prices double, the budget line will

- A. Shift parallel away from the origin
- B. Shift parallel towards the origin
- C. Shift upwards
- D. Shift downwards
- E. Remain unchanged

Answer 4.4: E (Real income and prices have not changed.)

Question 4.5: Budget Line and Inflation

If the consumer's income remains the same and all prices double, the budget line will

- A. Shift parallel away from the origin
- B. Shift parallel towards the origin
- C. Shift upwards
- D. Shift downwards
- E. Remain unchanged

Answer 4.5: B (Real income has been cut in half.)

Question 4.6: Engel Curve

If the Engel curve is shaped like the parabola $y = 100 - (x - 10)^2$, the good is

- A. A normal good
- B. An inferior good
- C. A normal good at low income and an inferior good at high income
- D. An inferior good at low income and a normal good at high income
- E. A Giffen good

Answer 4.6: C

(See the practice problem of Jacob and Joseph buying gruel and mutton for explanation.)

Question 4.7: Pasta and Steak

If poor people eat pasta and wealthy people eat steak, then

- A. Pasta is an inferior good at both low and high incomes, and steak is a normal good at both low and high incomes.
- B. Pasta is an inferior good at low incomes and a normal good at high incomes; steak is a normal good at both low and high incomes.
- C. Pasta is a normal good at low incomes and an inferior good at high incomes; steak is a normal good at both low and high incomes.
- D. Pasta is an inferior good at both low and high incomes; steak is a normal good at low incomes and an inferior good at high incomes.
- E. Pasta is an inferior good at both low and high incomes; steak is an inferior good at low incomes and a normal good at high incomes.

Answer 4.7: C

At low incomes, consumers can afford only pasta; they buy more as income increases. At high incomes, consumers prefer steak, so they buy less pasta as their incomes increase.

Consumers buy more steak as income increases. At low incomes, they rarely buy steak, and at high incomes they frequently buy steak, but steak is a normal good at all incomes.

Question 4.8: Indifference Curves and Demand Curves

Which of the following is not held constant when we use indifference curves to derive the demand curve for good X?

- A. The price of good X
- B. The price of good Y
- C. The consumer's income
- D. The consumer's tastes
- E. The value to the consumer of good X

Answer 4.8: A

Landsburg shows the procedure to derive a demand curve from indifference curves. We don't do this in practice, but the text shows the logic connecting the two types of curves.

Question 4.9: Income Elasticity of Demand

If the income elasticity of a good is positive, we may infer that

- A. The good is normal.
- B. The good is inferior.
- C. The Engle curve is downward sloping.
- D. The compensated demand curve is the same as the uncompensated demand curve.
- E. The compensated demand curve is flatter than the uncompensated demand curve.

Answer 4.9: A

Question 4.10: Engel Curves

All but which of the following are true regarding Engel curves?

- A. An Engel curve shows how consumption changes as income changes.
- B. If consumers buy more of a good as income rises, the good is normal.
- C. If consumers buy less of a good as income rises, the good is inferior.
- D. The Engel curve for a particular good may be positively sloped for a high income consumer and negatively sloped for a low income consumer.
- E. All of A, B, C, and D are true.

Answer 4.10: D

For a *low quality* good, the Engel curve may be *negatively* sloped for a high income consumer and *positively* sloped for a low income consumer. We show examples in the other questions. The reverse attributes do not occur.

Exercise 4.11: Mutton and Gruel

In Canaan, the wealthy eat mutton and the poor eat gruel. All consumers have income between zero and 20 shekels.

- The Engel curve for gruel is $Q = 100 - (\text{Income} - 10)^2$ for $0 \leq \text{Income} \leq 20$.
- The Engel curve for mutton is $Q = \text{Income} \times 5$.

Jacob has income of 15 shekels and Joseph has income of 5 shekels.

Which of the following is true?

- A. Gruel is a normal good for Jacob and an inferior good for Joseph.
- B. Gruel is an inferior good for Jacob and a normal good for Joseph.
- C. Mutton is a normal good for Jacob and an inferior good for Joseph.
- D. Mutton is an inferior good for Jacob and a normal good for Joseph.
- E. Gruel is a normal good for both Jacob and Joseph.

Answer 4.11: B

The income elasticity of demand is $\partial Q/\partial I \times I/Q$. Both income and quantity are positive, so the income elasticity of demand is the same sign as $\partial Q/\partial I$, the slope of the Engel curve. The slope is $1/5$ for mutton, which is a normal good for all consumers. For gruel:

- As income rises from 0 to 10, quantity demanded rises from 0 to 100, so gruel is a normal good for Joseph, whose income is 5.
- As income rises from 10 to 20, quantity demanded falls from 100 to 0, so gruel is an inferior good for Jacob, whose income is 15.

Question: Can we solve this problem by taking derivatives?

Answer: $(\text{Income} - 10)^2 = 100 - Q \Rightarrow \text{Income} = \pm(100 - Q)^{1/2} + 10$. The *plus or minus* sign makes it hard to tell if the derivative is positive or negative.

Question 4.12: Cross Elasticities

All but which of the following are true regarding cross elasticities?

- A. Demand is likely to be highly elastic if there are a large number of close substitutes.
- B. The cross elasticity of demand for substitutes is positive.
- C. Large cross elasticities are evidence of competition and small cross elasticities are evidence of monopoly.
- D. The cross elasticity of demand for complements is negative.
- E. All of A, B, C, and D are true.

Answer 4.12: E

Suppose wine and beer are substitutes but wine and cheese are complements.

- If the price of wine rises, consumers buy more beer (substitutes), so the cross elasticity of demand is positive.
- If the price of wine rises, consumers buy less cheese (complements), so the cross elasticity of demand is negative.

Question: In a competitive market, the price elasticity of demand is large. How does the price elasticity of demand relate to the cross elasticity of demand?

Answer: Suppose there were only one type of beer in a town and many devoted beer drinkers. If the price of beer rises, the beer drinkers pay more, but few of them give up drinking beer.

If there are two brands of beer that are perfect substitutes and the price of one brand rises, two things happen:

- Beer drinkers buy the other brand (positive cross elasticity of demand).
- Beer drinkers stop buying the first brand (negative price elasticity of demand).

A highly positive cross elasticity of demand indicates a highly negative price elasticity of demand and a competitive market.