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The Theory of Consumer Choice

The Theory of Consumer Choice

- The theory of consumer choice addresses the following questions:
  - Do all demand curves slope downward?
  - How do wages affect labor supply?
  - How do interest rates affect household saving?

THE BUDGET CONSTRAINT: WHAT THE CONSUMER CAN AFFORD

- The *budget constraint* depicts the limit on the consumption "bundles" that a consumer can afford.
  - People consume less than they desire because their spending is constrained, or limited, by their income.

THE BUDGET CONSTRAINT: WHAT THE CONSUMER CAN AFFORD

- The budget constraint shows the various combinations of goods the consumer can afford given his or her income and the prices of the two goods.
- Suppose there are two goods, Pizza (x) and Pepsi (y).
- Let Income of consumer is 1000 dollars, price of Pizza is 10 dollars per unit and price of Pepsi is 2 dollars per unit.

- The Budget Constraint in this case is given by
- $10x+2y=1000$

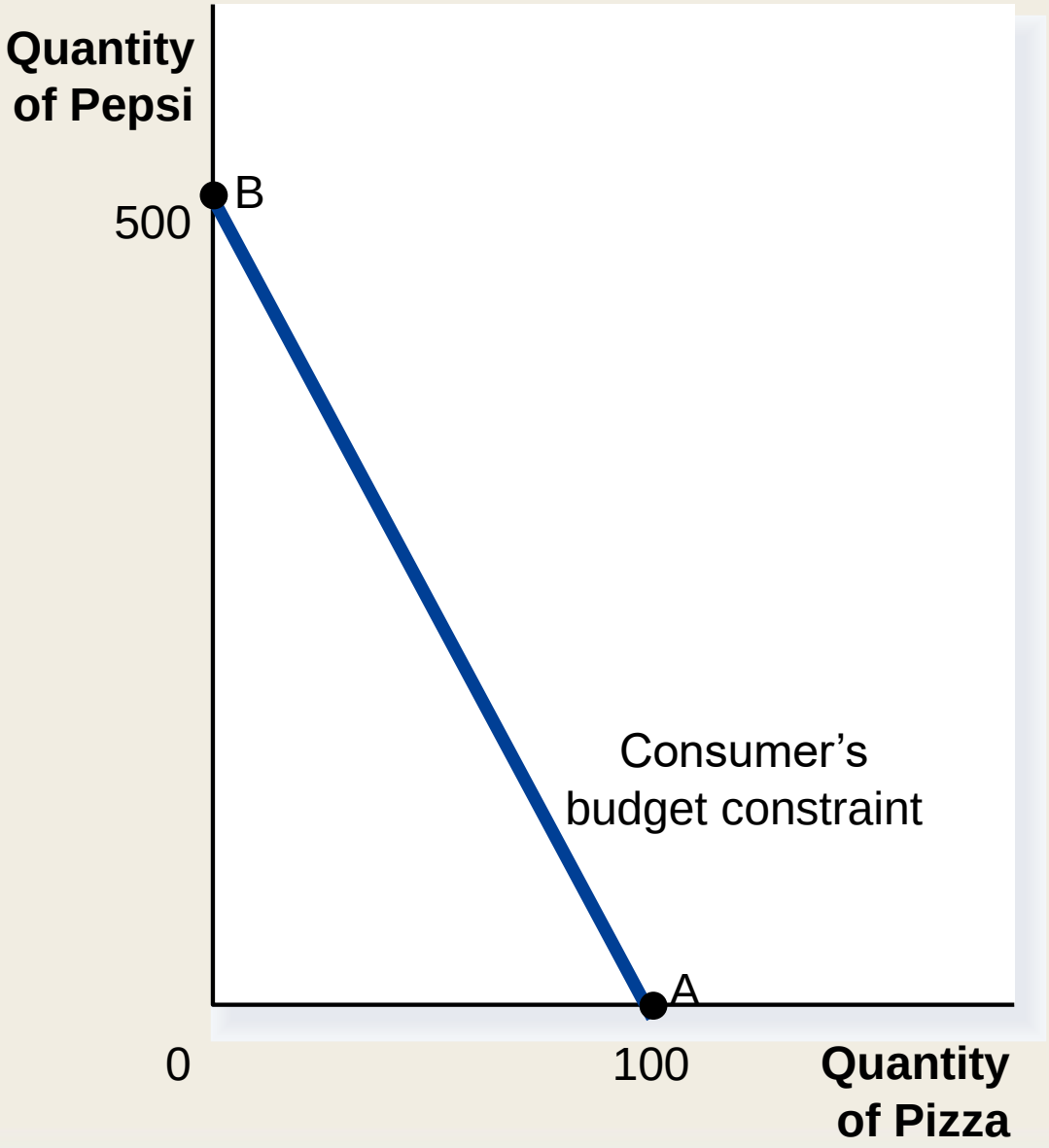
Figure 1 The Consumer's Budget Constraint: Let Pizza price is 10 dollars per unit, and Pepsi price is 2 dollars per unit

Pints of Pepsi	Number of Pizzas	Spending on Pepsi	Spending on Pizza	Total Spending
0	100	$ 0	$1,000	$1,000
50	90	100	900	1,000
100	80	200	800	1,000
150	70	300	700	1,000
200	60	400	600	1,000
250	50	500	500	1,000
300	40	600	400	1,000
350	30	700	300	1,000
400	20	800	200	1,000
450	10	900	100	1,000
500	0	1,000	0	1,000

THE BUDGET CONSTRAINT: WHAT THE CONSUMER CAN AFFORD

- The Consumer's Budget Constraint
  - Any point on the budget constraint line indicates the consumer's combination or trade-off between two goods.
  - For example, if the consumer buys no pizzas, he can afford 500 pints of Pepsi (point B). If he buys no Pepsi, he can afford 100 pizzas (point A).

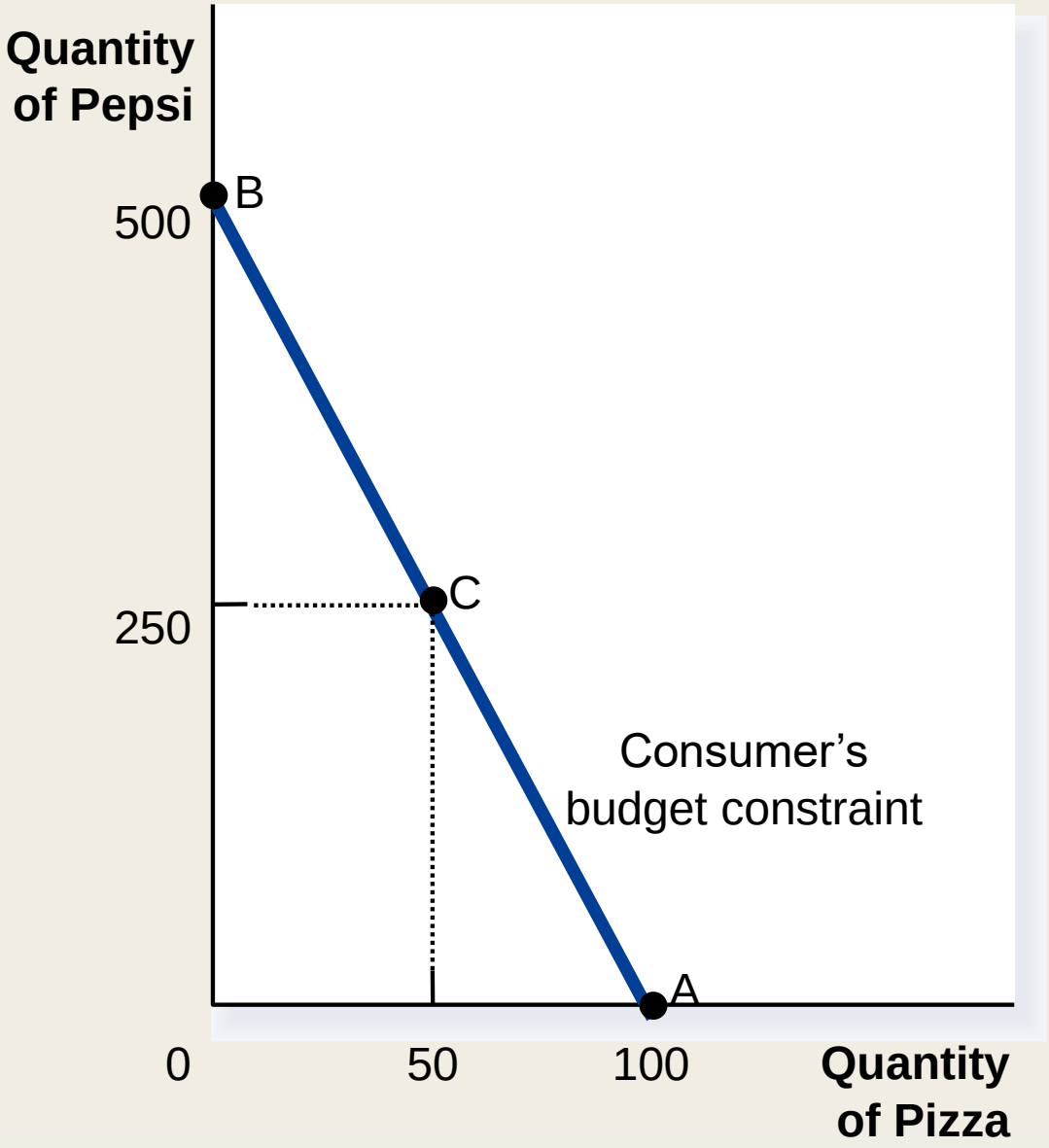
Figure 1 The Consumer's Budget Constraint



THE BUDGET CONSTRAINT: WHAT THE CONSUMER CAN AFFORD

- The Consumer's Budget Constraint
  - Alternately, the consumer can buy 50 pizzas and 250 pints of Pepsi.

Figure 1 The Consumer's Budget Constraint



THE BUDGET CONSTRAINT: WHAT THE CONSUMER CAN AFFORD

- The *slope* of the budget constraint line equals the relative price of the two goods, that is, *the price of one good compared to the price of the other*.
- It measures the rate at which the consumer can trade one good for the other.

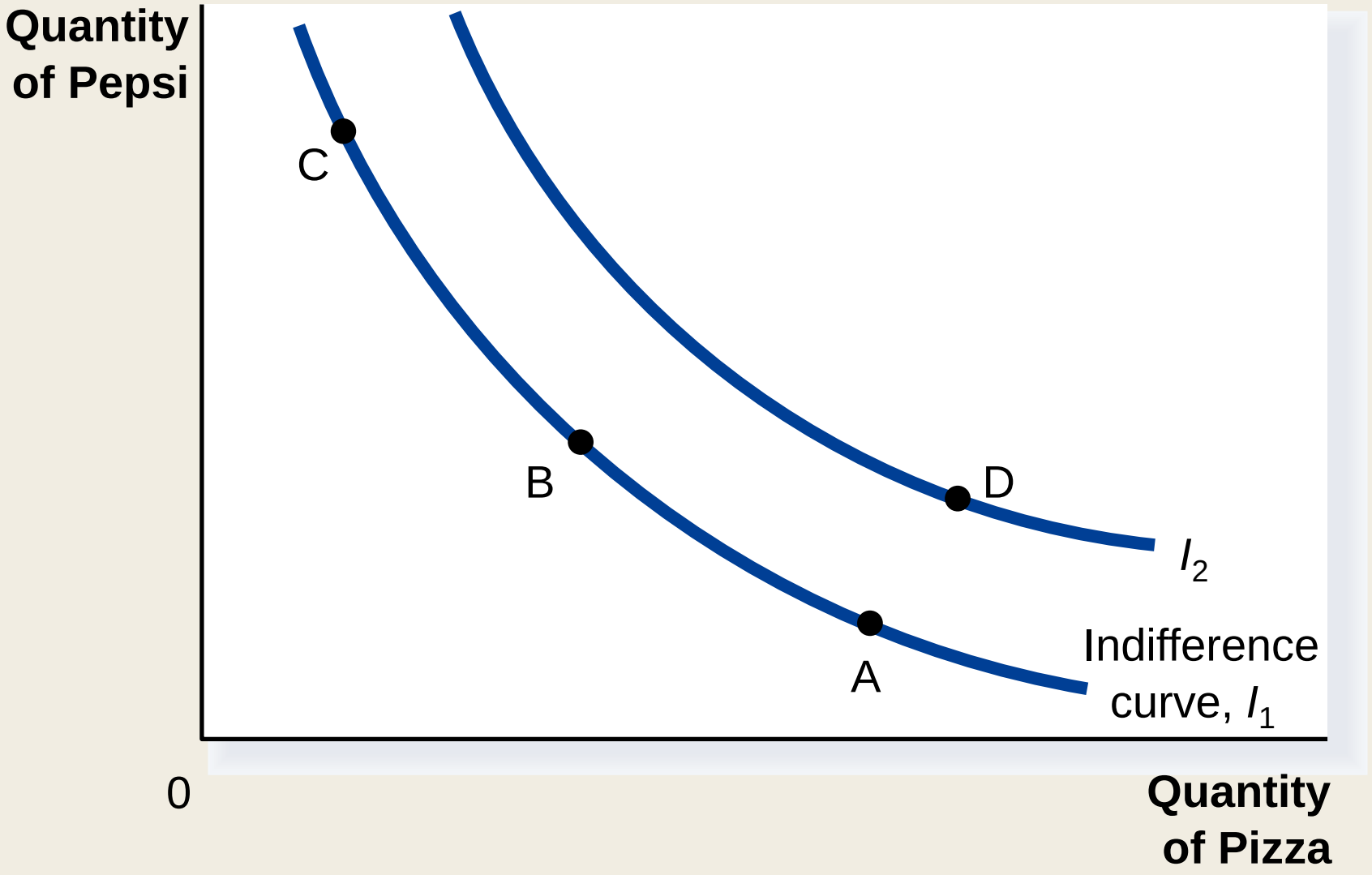
PREFERENCES: WHAT THE CONSUMER WANTS

- A consumer's preference among consumption bundles may be illustrated with indifference curves.

Representing Preferences with Indifference Curves

- An *indifference curve* is a curve that shows consumption bundles that give the consumer the same level of satisfaction.

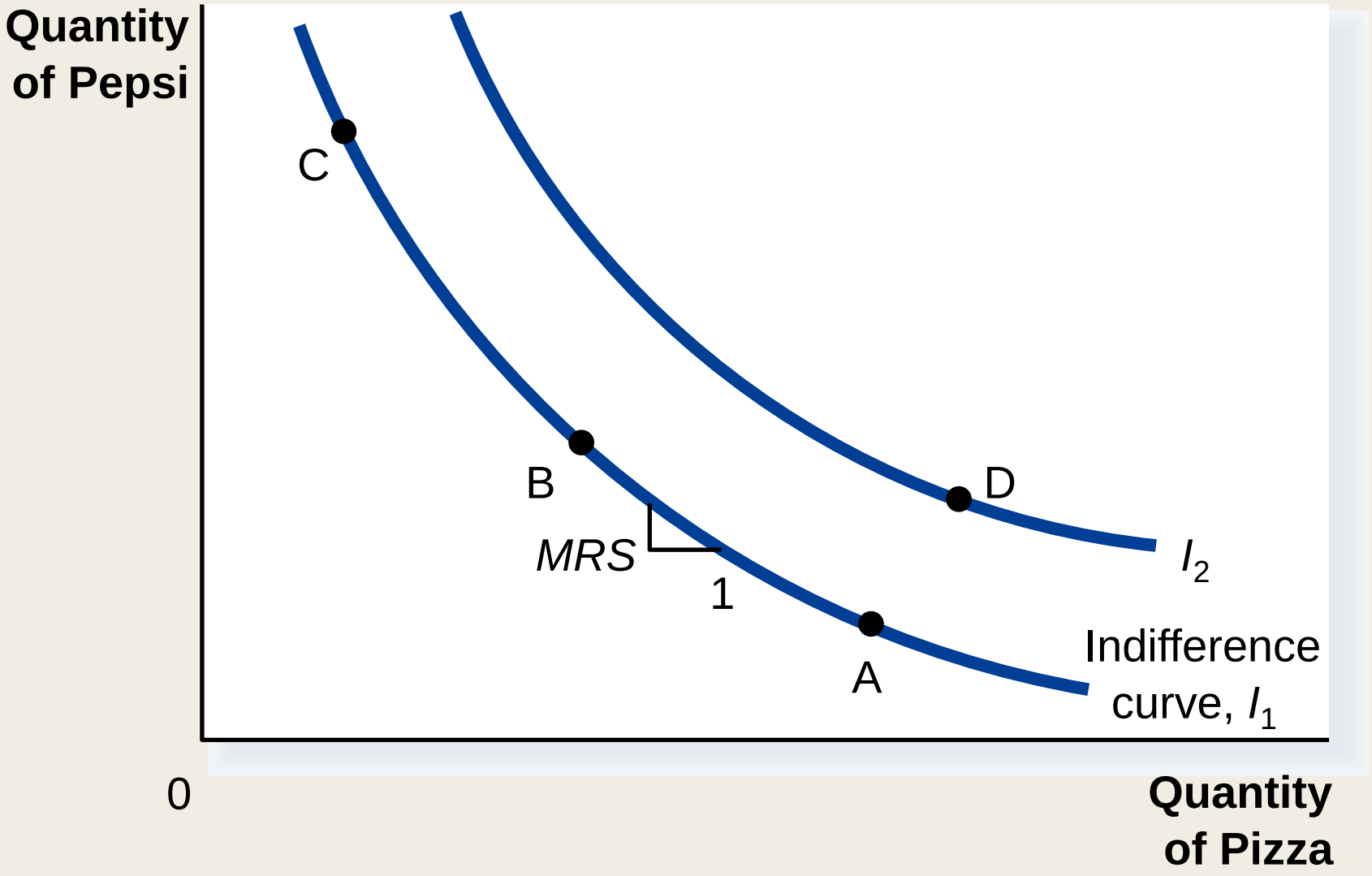
Figure 2 The Consumer's Preferences



Representing Preferences with Indifference Curves

- The Consumer's Preferences
  - The consumer is indifferent, or equally happy, with the combinations shown at points A, B, and C because they are all on the same curve.
- The Marginal Rate of Substitution
  - The slope at any point on an indifference curve is the *marginal rate of substitution*.
    - It is the rate at which a consumer is willing to trade one good for another.
    - It is the amount of one good that a consumer requires as compensation to give up one unit of the other good.

Figure 2 The Consumer's Preferences



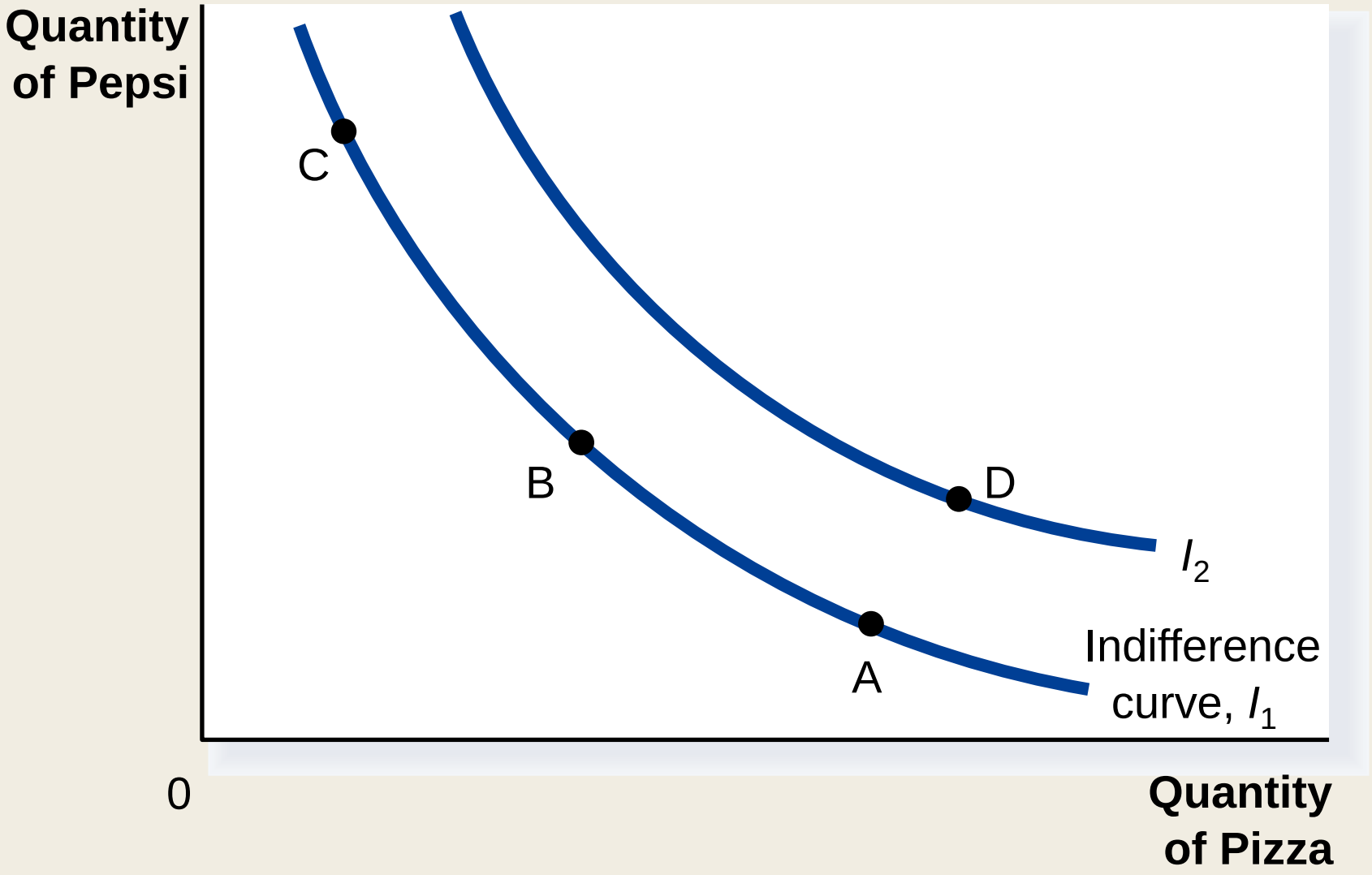
Four Properties of Indifference Curves

- Higher indifference curves are preferred to lower ones.
- Indifference curves are downward sloping.
- Indifference curves do not cross.
- Indifference curves are bowed inward.

Four Properties of Indifference Curves

- Property 1: Higher indifference curves are preferred to lower ones.
  - Consumers usually prefer more of something to less of it.
  - Higher indifference curves represent larger quantities of goods than do lower indifference curves.

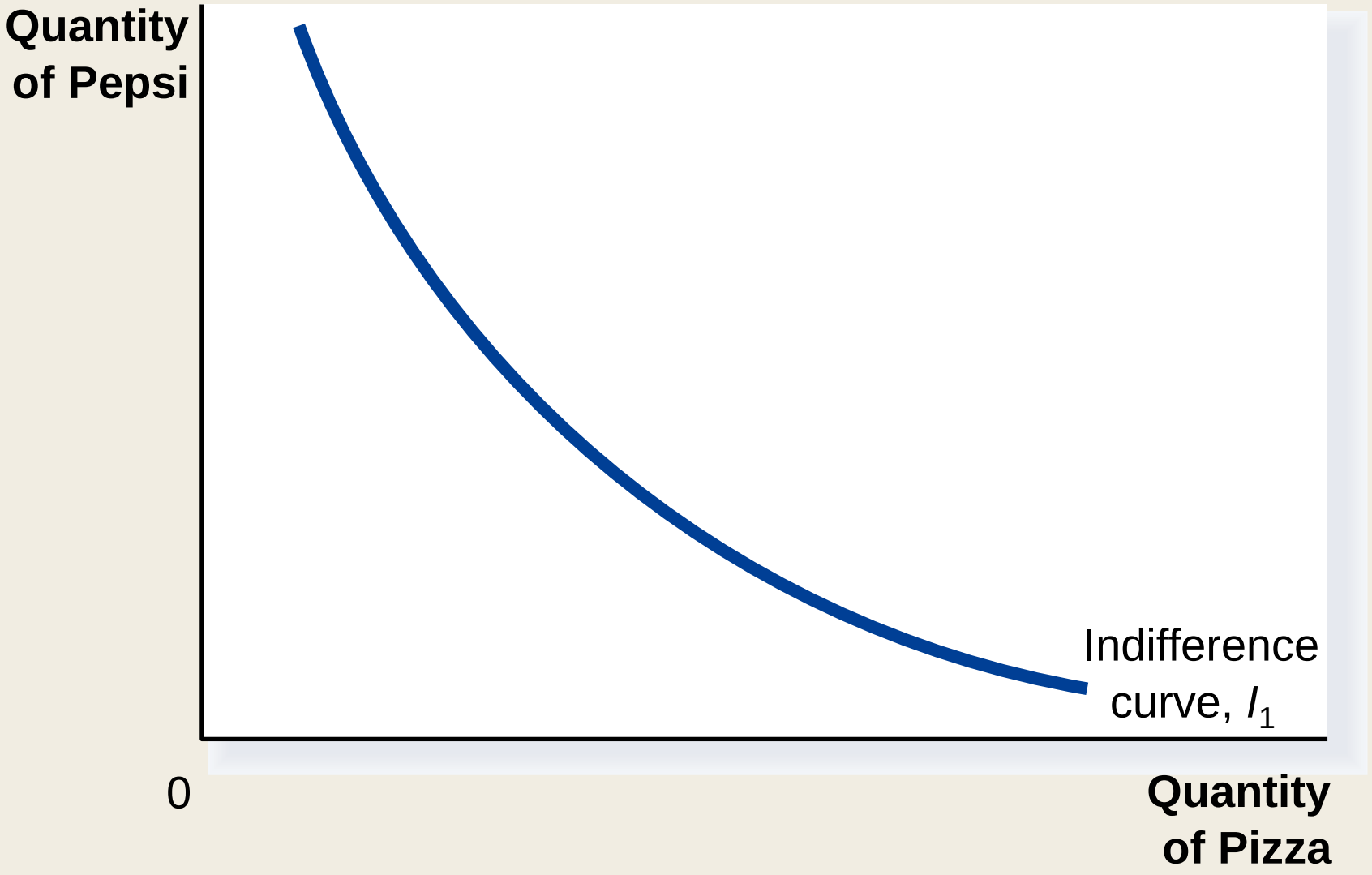
Figure 2 The Consumer's Preferences



Four Properties of Indifference Curves

- Property 2: Indifference curves are downward sloping.
  - A consumer is willing to give up one good only if he or she gets more of the other good in order to remain equally happy.
  - If the quantity of one good is reduced, the quantity of the other good must increase.
  - For this reason, most indifference curves slope downward.
  - Remember, a consumer is equally happy at all points along a given indifference curve.

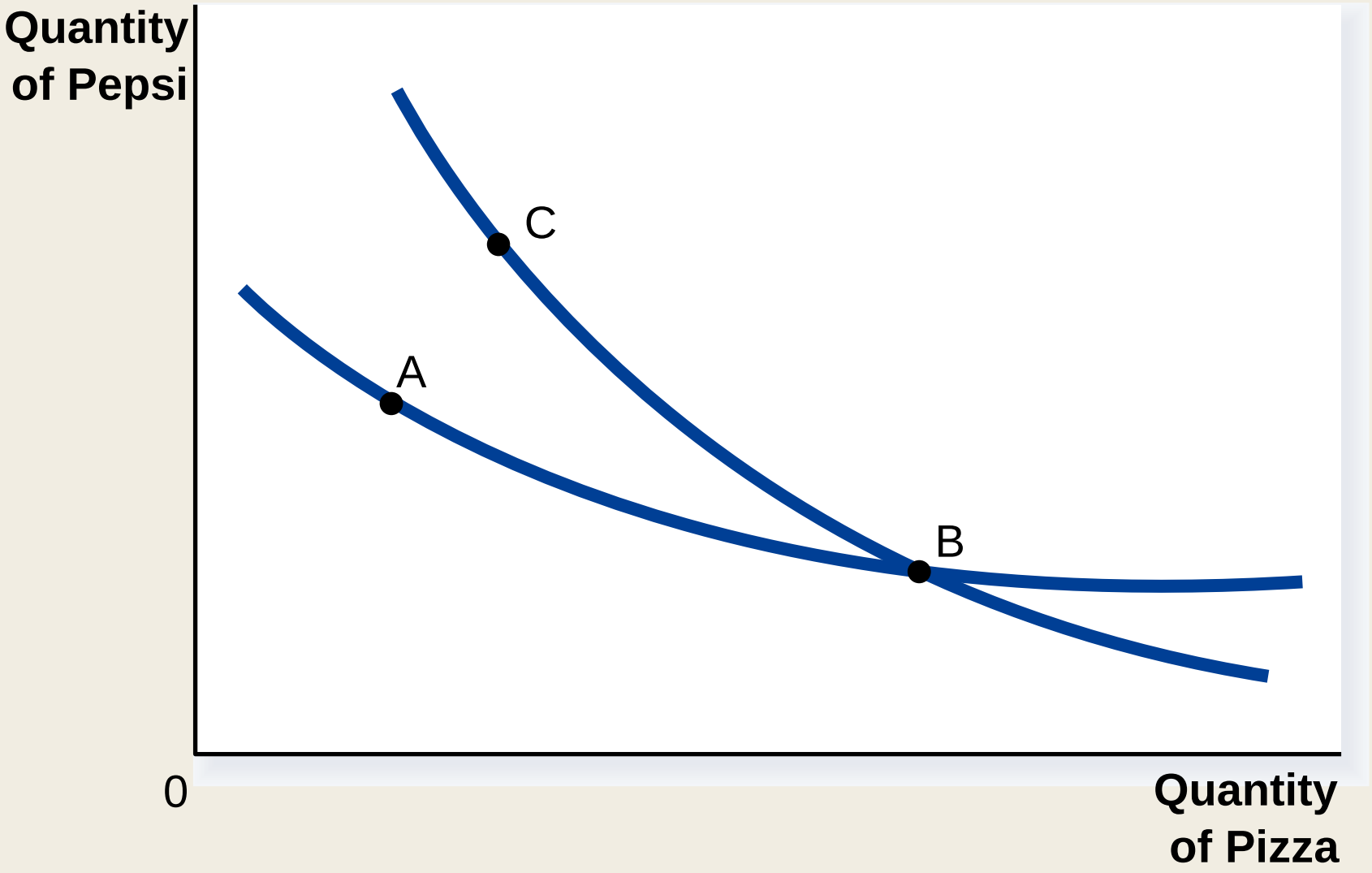
Figure 2 The Consumer's Preferences



Four Properties of Indifference Curves

- Property 3: Indifference curves do not cross.
  - Points A and B should make the consumer equally happy.
  - Points B and C should make the consumer equally happy.
  - This implies that A and C would make the consumer equally happy.
  - But C has more of both goods compared to A.

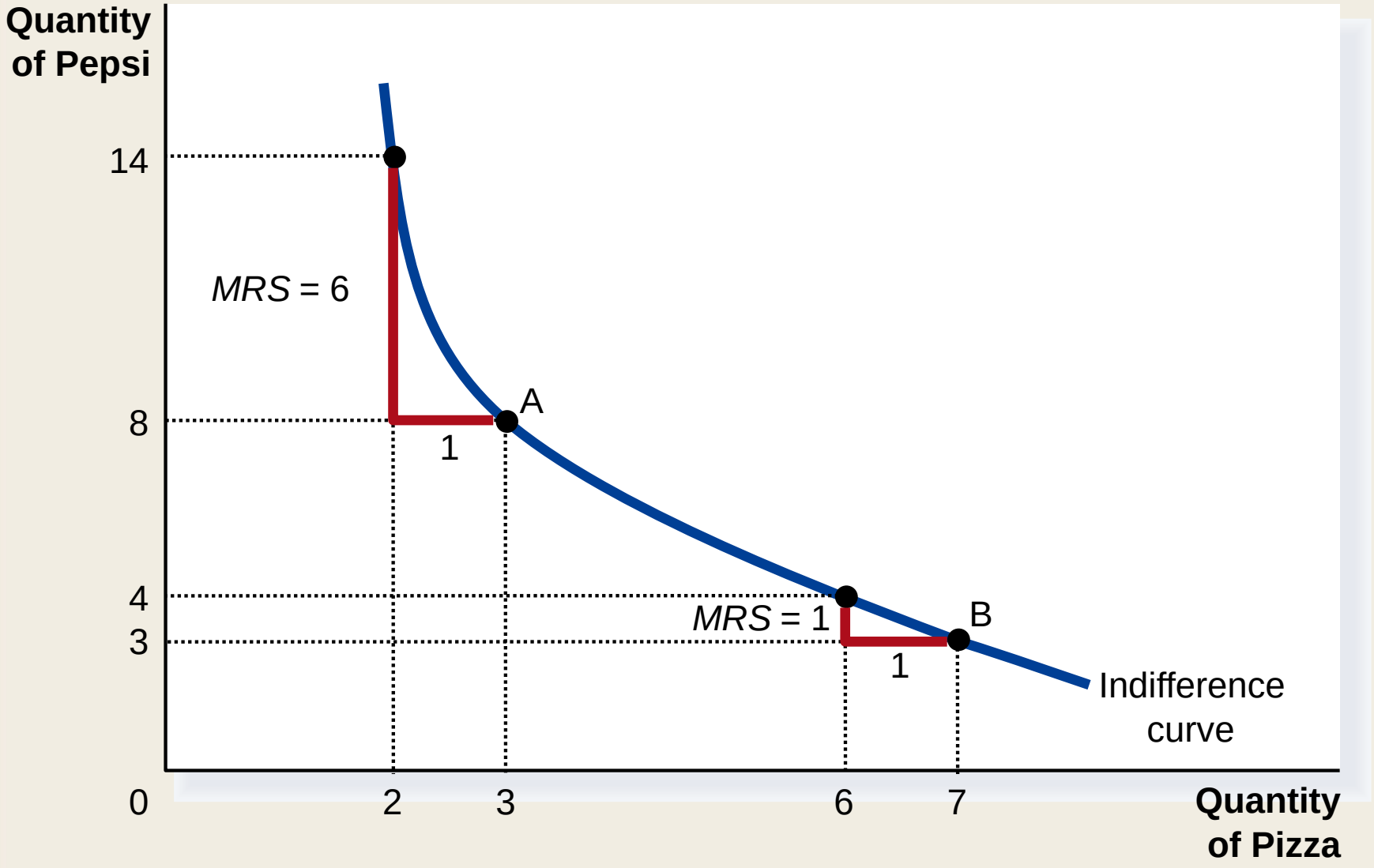
Figure 3 The Impossibility of Intersecting Indifference Curves



Four Properties of Indifference Curves

- Property 4: Indifference curves are bowed inward.
  - People are more willing to trade away goods that they have in abundance and less willing to trade away goods of which they have little.
  - These differences in a consumer's marginal substitution rates cause his or her indifference curve to bow inward.

Figure 4 Bowed Indifference Curves



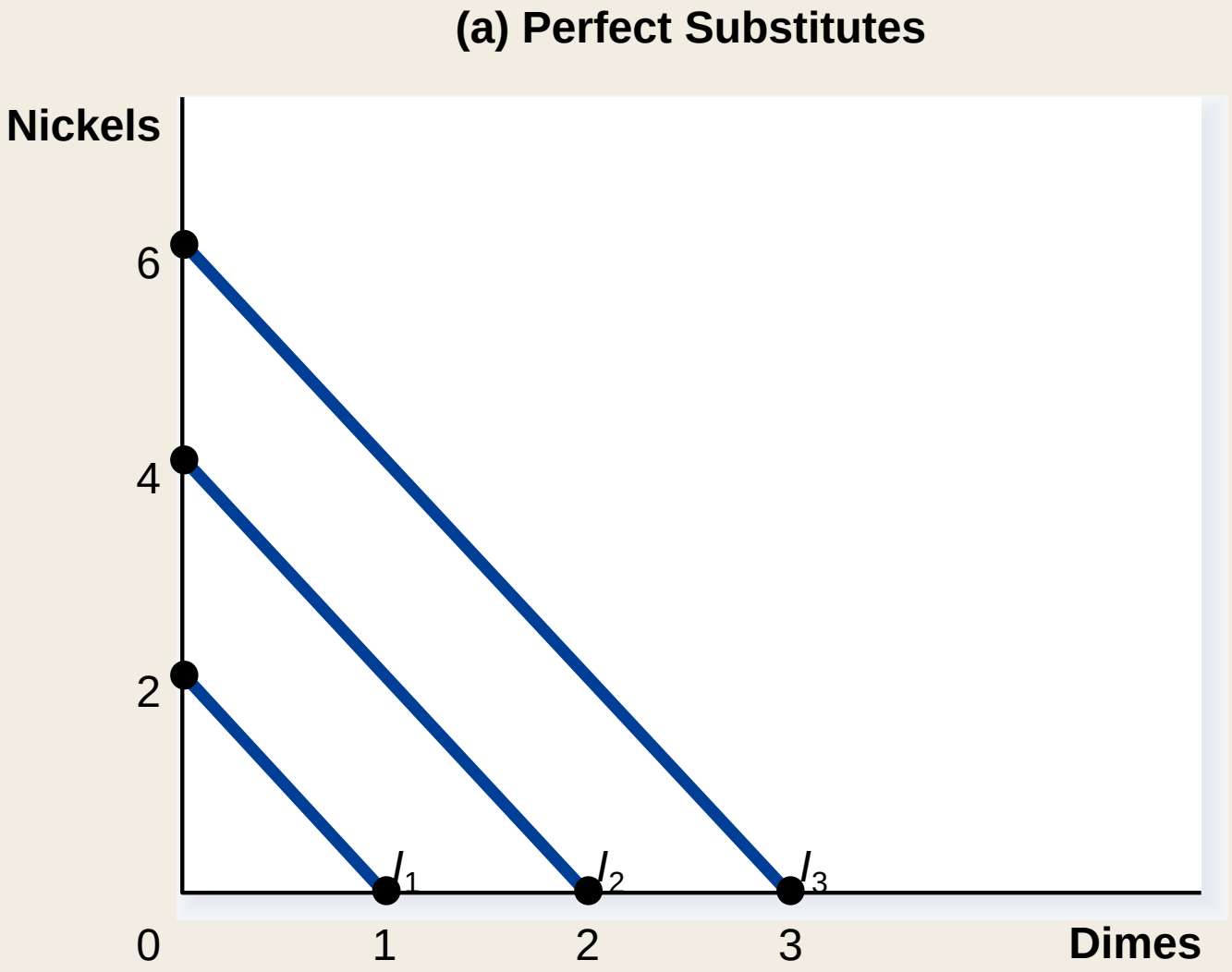
Two Extreme Examples of Indifference Curves

- Perfect substitutes
- Perfect complements

Two Extreme Examples of Indifference Curves

- Perfect Substitutes
  - Two goods with straight-line indifference curves are *perfect substitutes.*
  - The marginal rate of substitution is a fixed number.

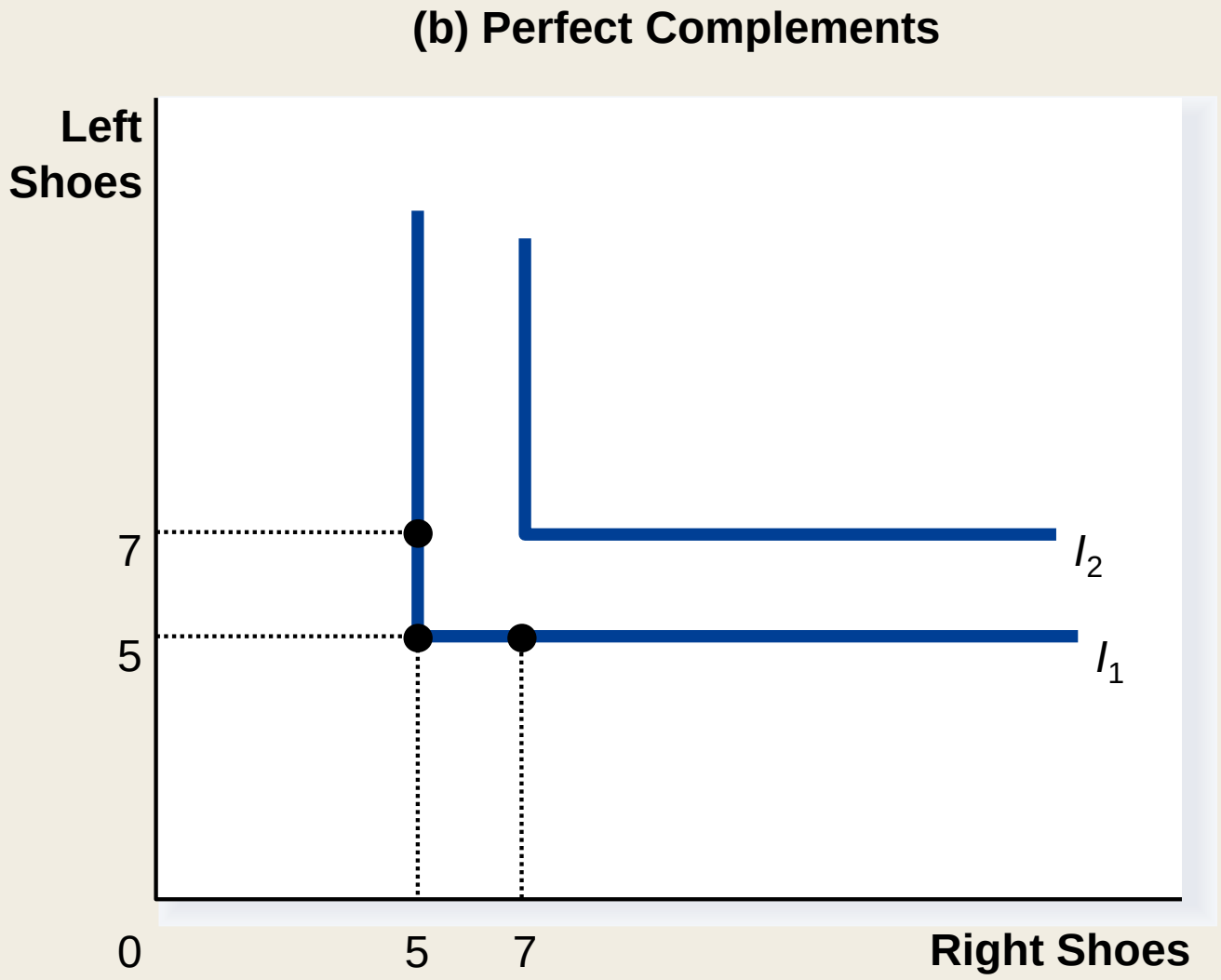
Figure 5 Perfect Substitutes and Perfect Complements



Two Extreme Examples of Indifference Curves

- Perfect Complements
  - Two goods with right-angle indifference curves are *perfect complements.*
  - Since these goods are always used together, extra units of one good, outside the desired consumption ratio, add no additional satisfaction.

Figure 5 Perfect Substitutes and Perfect Complements



OPTIMIZATION: WHAT THE CONSUMER CHOOSES

- Consumers want to get the combination of goods on the highest possible indifference curve.
- However, the consumer must also end up on or below his budget constraint.

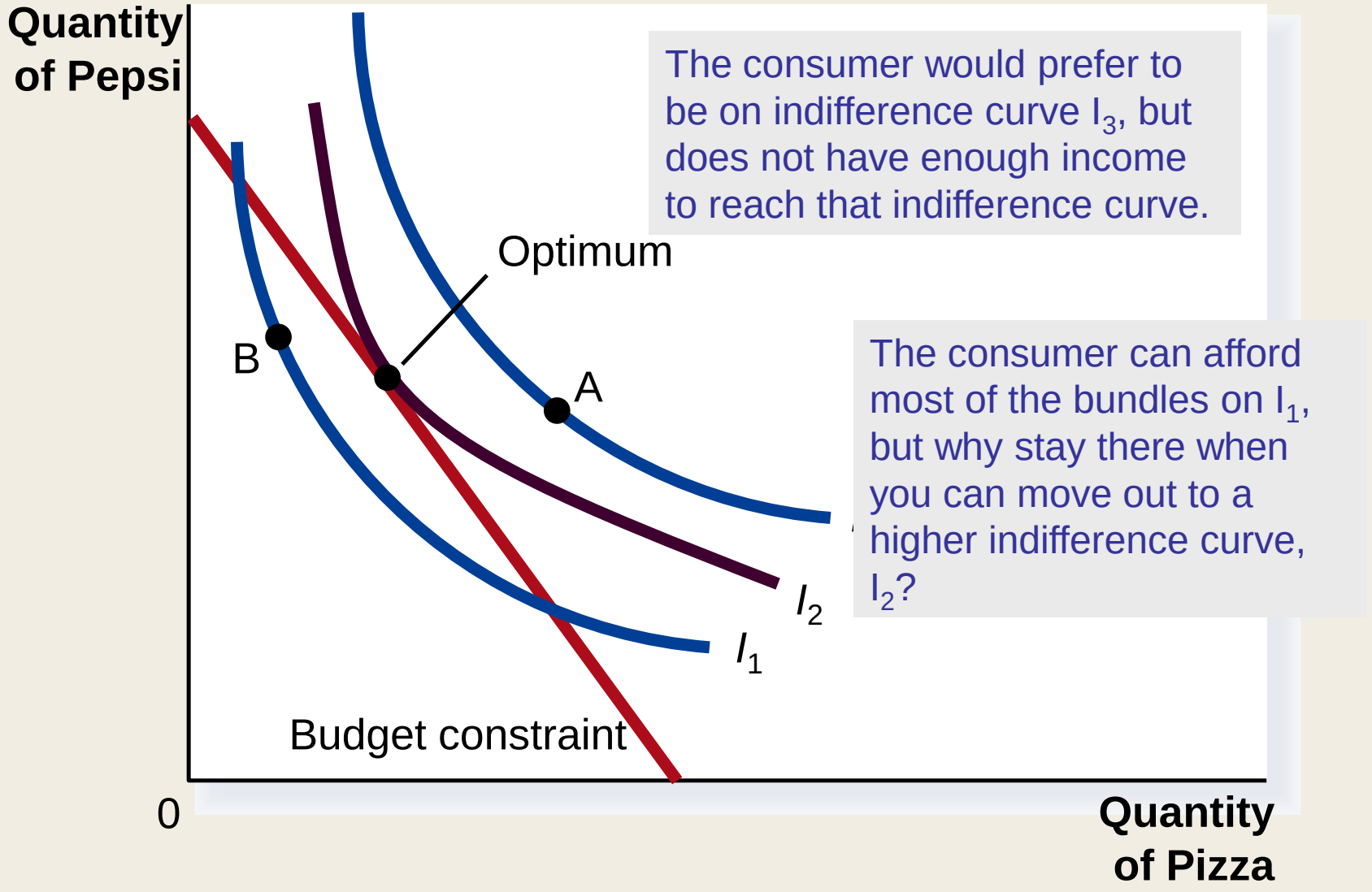
The Consumer's Optimal Choices

- Combining the indifference curve and the budget constraint determines the consumer's optimal choice.
- Consider a well-behaved indifference curve that is bowed inward.
- Consumer optimum occurs at the point where the highest indifference curve and the budget constraint are tangent.

The Consumer's Optimal Choice

- The consumer chooses consumption of the two goods so that the marginal rate of substitution equals the relative price.
- At the consumer's optimum, the consumer's valuation of the two goods equals the market's valuation.

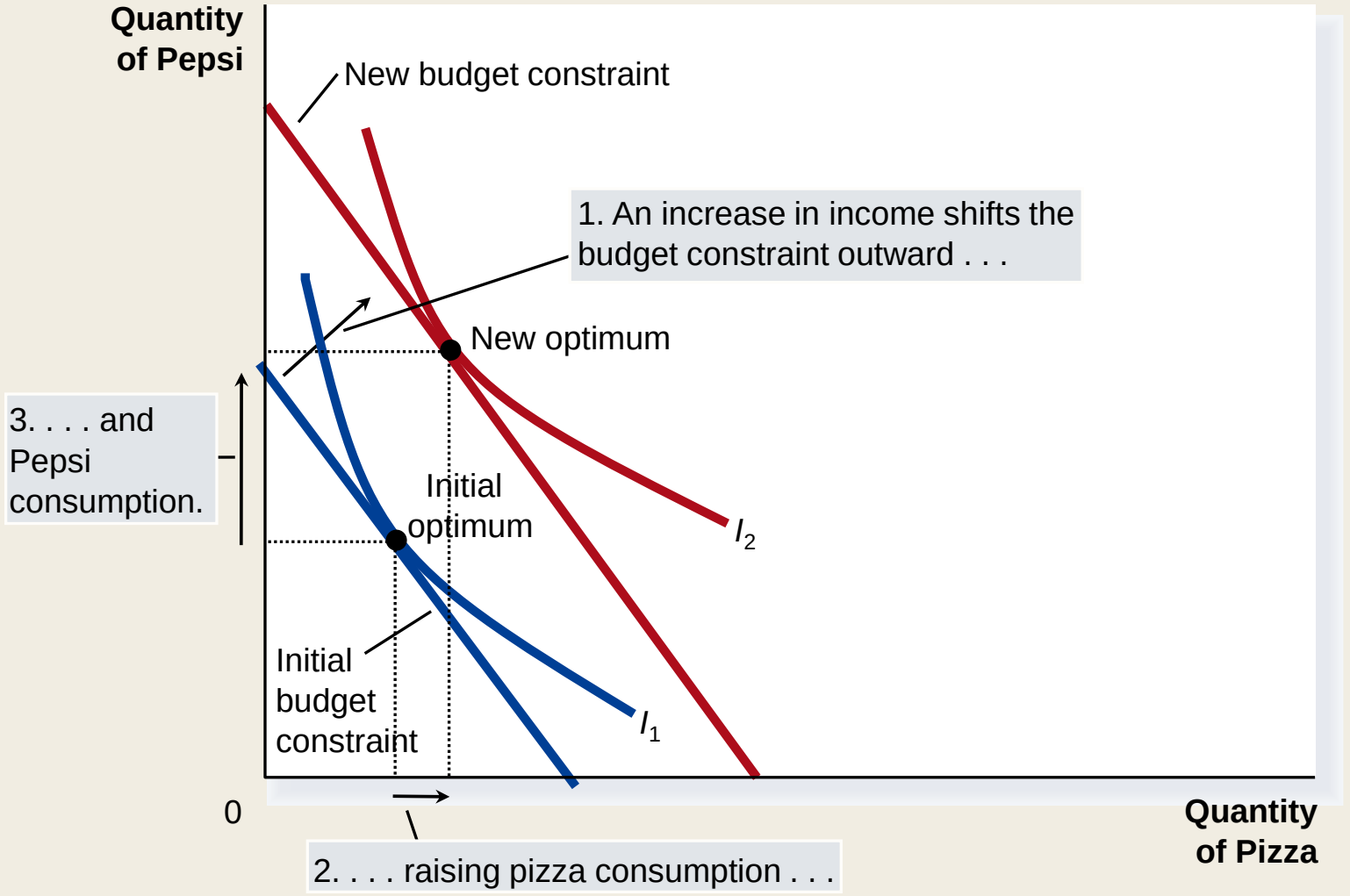
Figure 6 The Consumer's Optimum



How Changes in Income Affect the Consumer's Choices

- An increase in income shifts the budget constraint outward.
  - The consumer is able to choose a better combination of goods on a higher indifference curve.

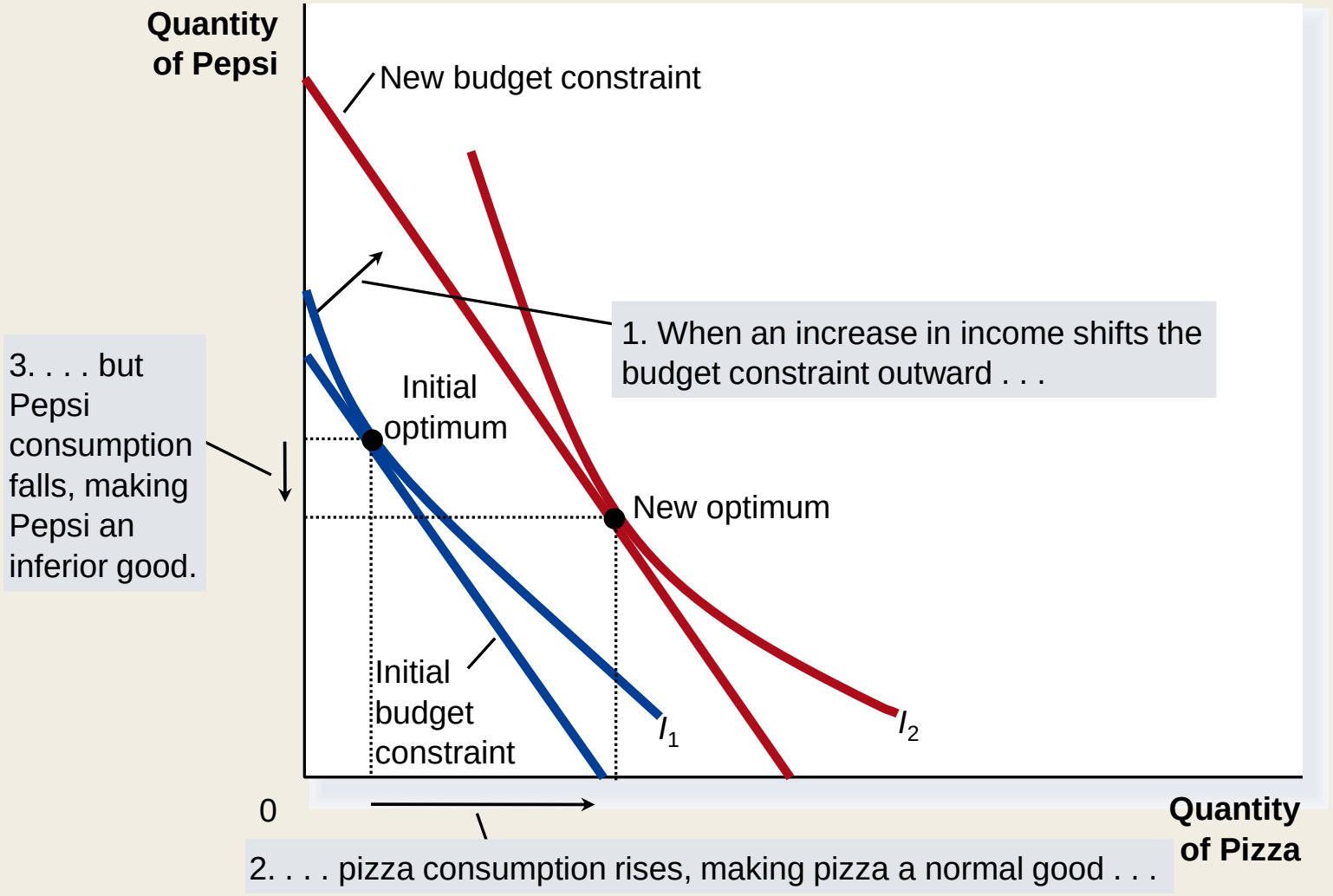
Figure 7 An Increase in Income



How Changes in Income Affect the Consumer's Choices

- Normal versus Inferior Goods
  - If a consumer buys more of a good when his or her income rises, the good is called a *normal good.*
  - If a consumer buys less of a good when his or her income rises, the good is called an *inferior good.*

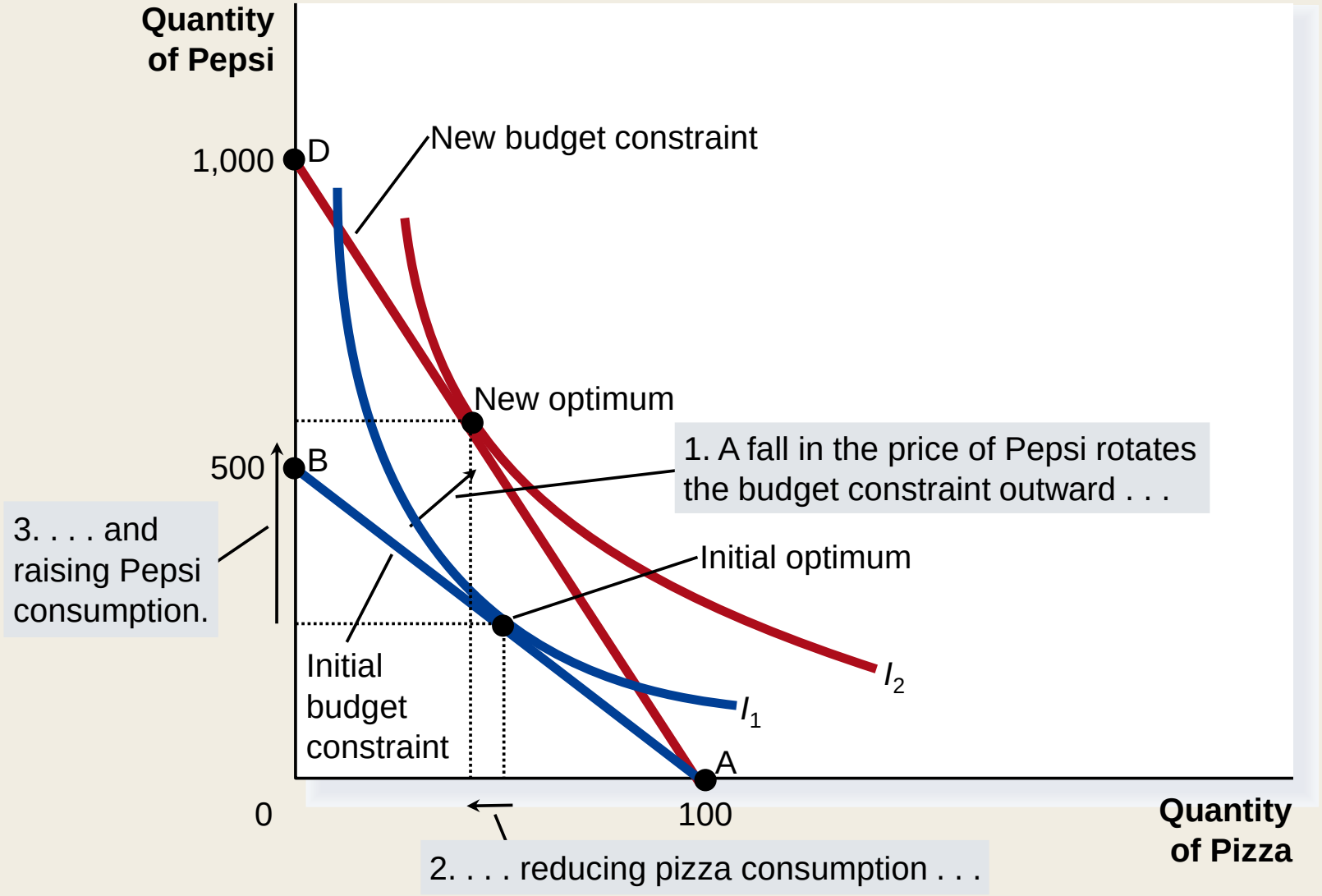
Figure 8 An Inferior Good



How Changes in Prices Affect Consumer's Choices

- A fall in the price of any good rotates the budget constraint outward and changes the slope of the budget constraint.

Figure 9 A Change in Price



Income and Substitution Effects

- A price change has two effects on consumption.
  - An income effect
  - A substitution effect

Income and Substitution Effects

- The Substitution Effect
  - The *substitution effect* is the change in consumption that results when a price change moves the consumer along an indifference curve to a point with a different marginal rate of substitution.
- The Income Effect
  - The *income effect* is the change in consumption that results when a price change moves the consumer to a higher or lower indifference curve.

Income and Substitution Effects

- A Change in Price: Substitution Effect
  - A price change first causes the consumer to move from one point on an indifference curve to another on the same curve.
    - Illustrated by movement from point A to point B.
- A Change in Price: Income Effect
  - After moving from one point to another on the same curve, the consumer will move to another indifference curve.
    - Illustrated by movement from point B to point C.

Figure 10 Income and Substitution Effects

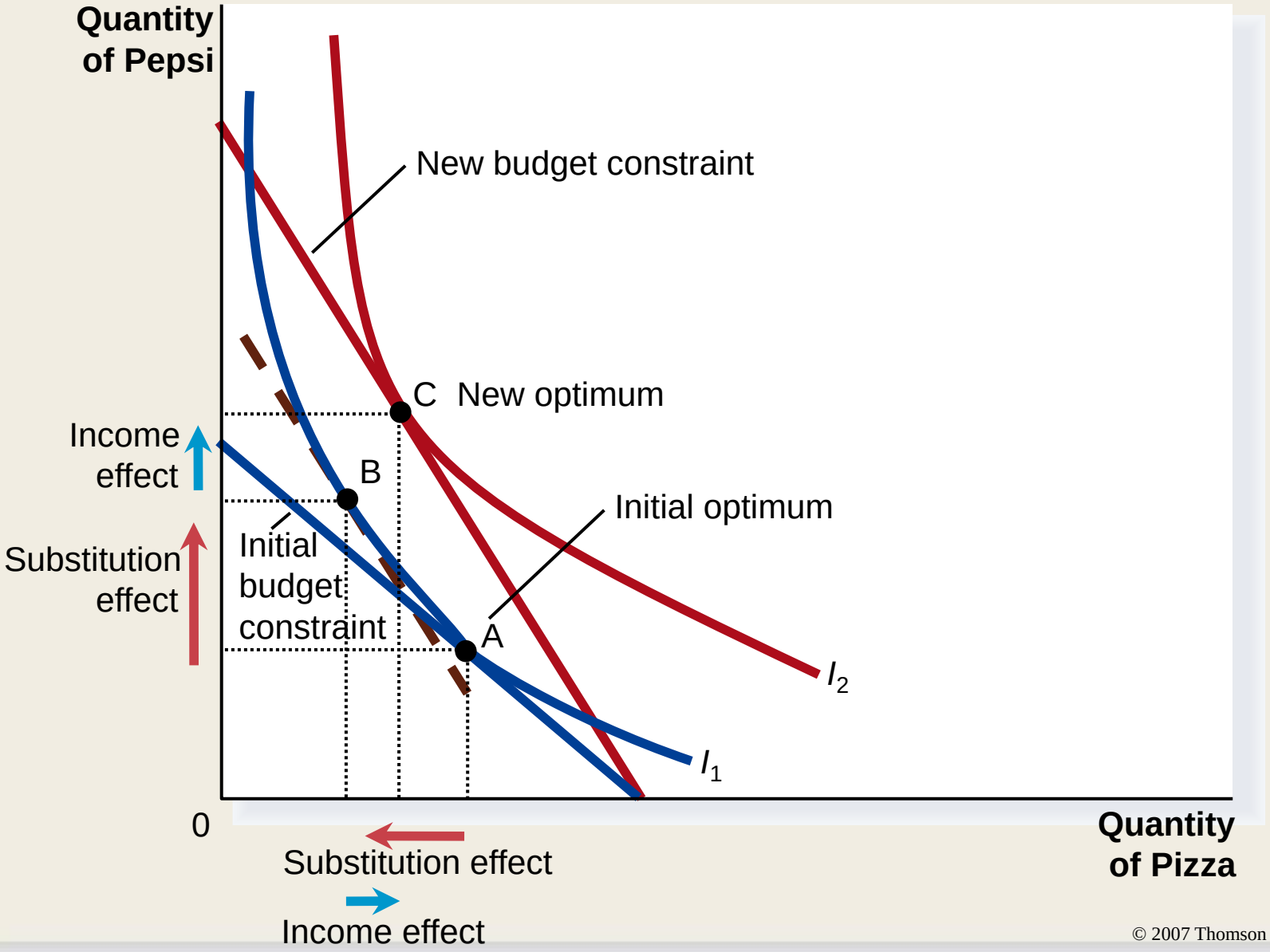


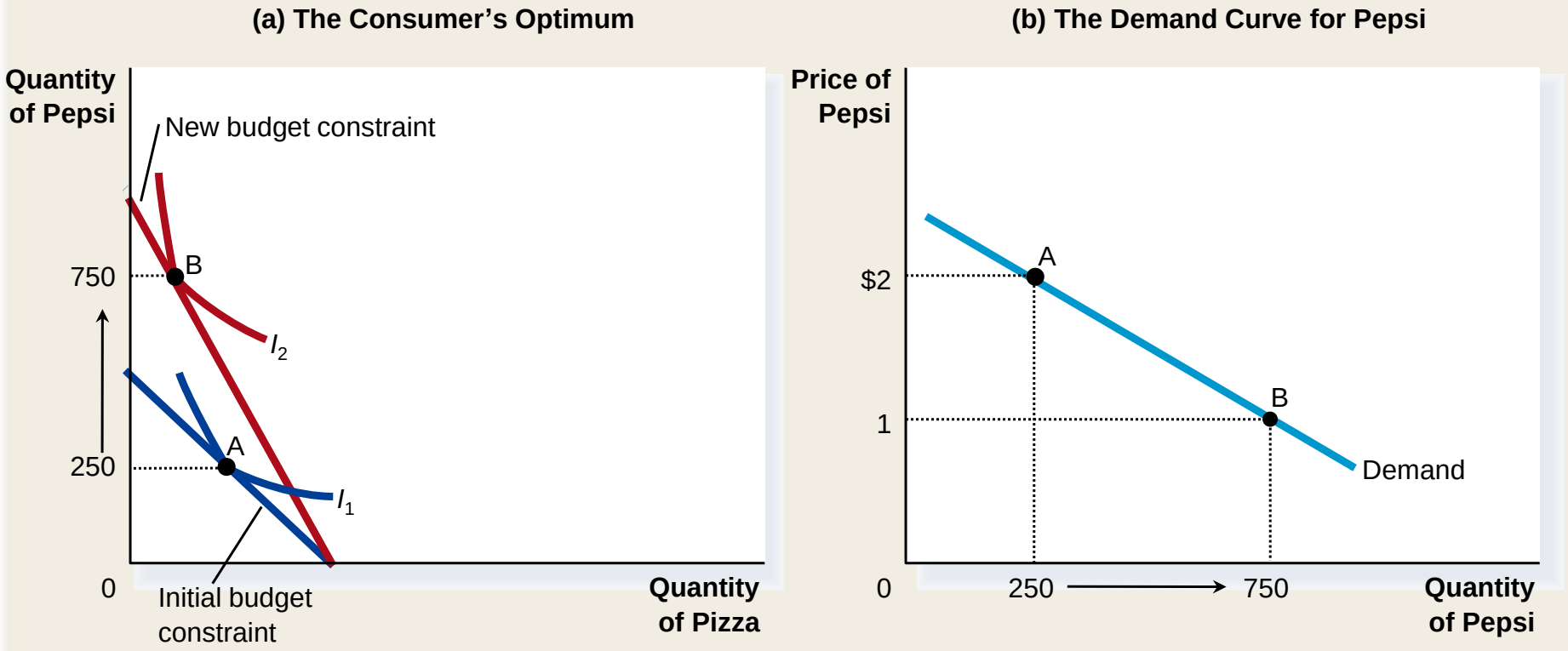
Table 1 Income and Substitution Effects When the Price of Pepsi Falls

Good	Income Effect	Substitution Effect	Total Effect
Pepsi	Consumer is richer, so he buys more Pepsi.	Pepsi is relatively cheaper, so consumer buys more Pepsi.	Income and substitution effects act in same direction, so consumer buys more Pepsi.
Pizza	Consumer is richer, so he buys more pizza.	Pizza is relatively more expensive, so consumer buys less pizza.	Income and substitution effects act in opposite directions, so the total effect on pizza consumption is ambiguous.

Deriving the Demand Curve

- A consumer's demand curve can be viewed as a summary of the optimal decisions that arise from his or her budget constraint and indifference curves.

Figure 11 Deriving the Demand Curve



THREE APPLICATIONS

- Do all demand curves slope downward?
- How do wages affect labor supply?

Do All Demand Curves Slope Downward?

- Demand curves can sometimes slope upward.
- This happens when a consumer buys more of a good when its price rises.
- Suppose there is a commodity x and its price is denoted by P.
- When P falls, x becomes relatively cheaper in relation to the other good y.

- Substitution effect entails the consumer will consume more of x even though he is confined to the same indifference curve of the pre price change level. This holds for both normal and inferior goods.
- For normal goods, income effect will entail an increase in consumption of x.
- For inferior goods, income effect will entail a decrease in consumption of x.

- For normal goods, both SE and IE work in the same direction and consumption of x is increased.
- As a result, the demand curve for normal goods is always downward sloping.

- For inferior goods, SE and IE work in opposite directions. According to SE, x is raised. But according to IE, x is decreased.
- If SE dominates IE, then for such inferior goods, the demand curve is till downward sloping.
- If IE dominates SE, then for such inferior goods, the demand curve is upward sloping.

- *Giffen goods*
  - Economists use the term Giffen good to describe an inferior good that violates the law of demand, where the demand curve is upward sloping.
  - Giffen goods are goods for which an increase in the price raises the quantity demanded.

How Do Wages Affect Labor Supply?

- Suppose there are two goods: Consumption and Leisure.
- The price of the consumption good is P, while the price (opportunity cost) of Leisure is Wage (w).
- Suppose w goes up.
- Leisure becomes relatively more expensive.
- SE dictates reduction of leisure.

- Note that even after consuming the initial (Consumption, Leisure) bundle at the post-change scenario with higher w, the consumer will now have a higher income.
- This will generate an income effect, according which a higher income will increase leisure.

- SE and IE work in opposite directions:
- According to SE, when wage rises leisure should be reduced
- According to IE, when wage rises leisure should be increased

- If the substitution effect is greater than the income effect for the worker, he or she reduces leisure and therefore works more.
- If income effect is greater than the substitution effect, he or she increases leisure and therefore works less.

Summary

- A consumer's budget constraint shows the possible combinations of different goods he can buy given his income and the prices of the goods.
- The slope of the budget constraint equals the relative price of the goods.
- The consumer's indifference curves represent his preferences.

Summary

- Points on higher indifference curves are preferred to points on lower indifference curves.
- The slope of an indifference curve at any point is the consumer's marginal rate of substitution.
- The consumer optimizes by choosing the point on his budget constraint that lies on the highest indifference curve.

Summary

- When the price of a good falls, the impact on the consumer's choices can be broken down into an income effect and a substitution effect.
- The income effect is the change in consumption that arises because a lower price makes the consumer better off.
- The income effect is reflected by the movement from a lower to a higher indifference curve.

Summary

- The substitution effect is the change in consumption that arises because a price change encourages greater consumption of the good that has become relatively cheaper.
- The substitution effect is reflected by a movement along an indifference curve to a point with a different slope.

Summary

- The theory of consumer choice can explain:
  - Why demand curves can potentially slope upward.
  - How wages affect labor supply.