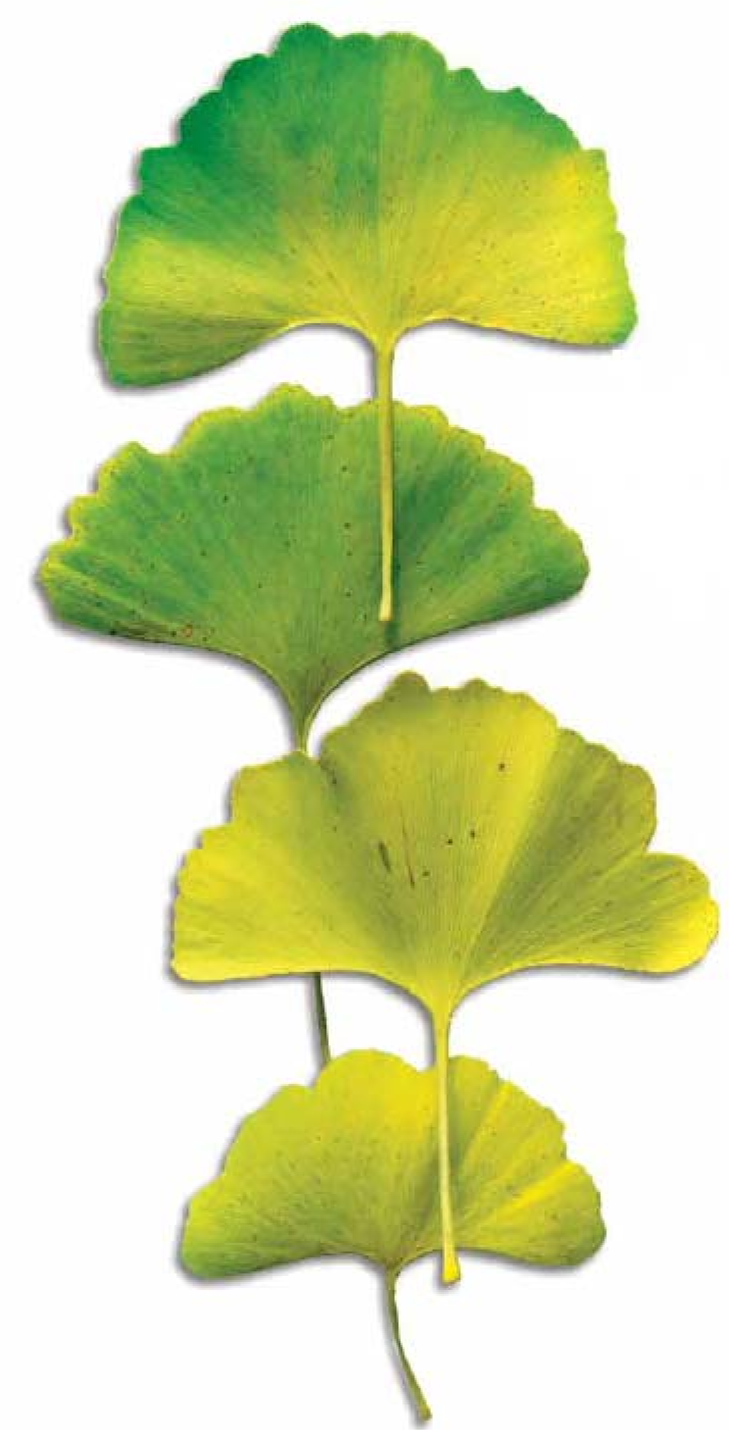


Chapter 4

Individual and Market Demand

Chapter Outline

- The Effects of Changes in the Price
- The Effects of Changes in Income
- The Income and Substitution Effects of a Price Change
- Consumer Responsiveness to Changes in Price
- Market Demand: Aggregating Individual Demand Curves
- Price Elasticity of Demand
- The Dependence of Market Demand on Income
- Application: Forecasting Economic Trends
- Cross-price Elasticities of Demand
- Appendix
  - The Constant elasticity of demand
  - The Income-Compensated Demand Curve

The Effect of Changes in Price

- ***Price-consumption curve (PCC):*** for a good X is the set of optimal bundles traced on an indifference map as the price of X varies (holding income and the price of Y constant).

Figure 4.1: The Price-Consumption Curve

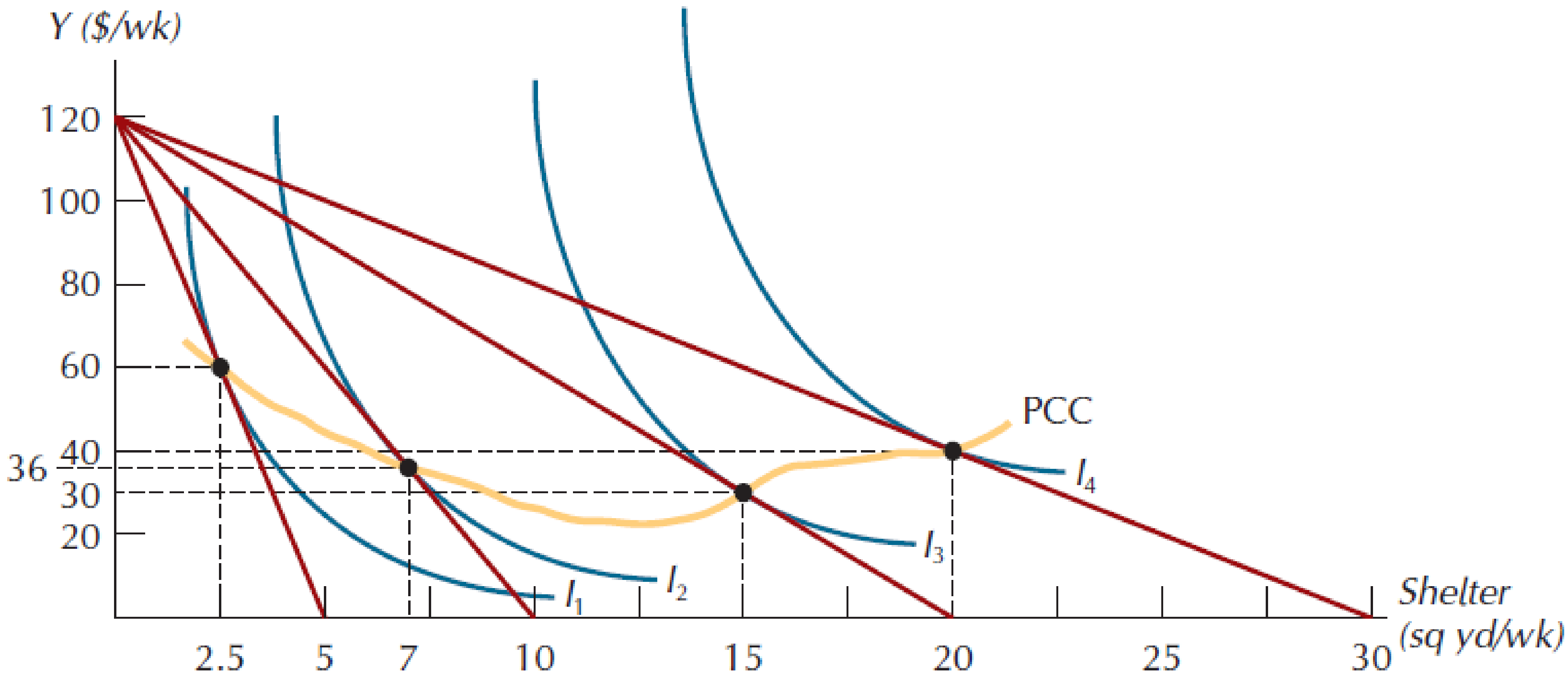
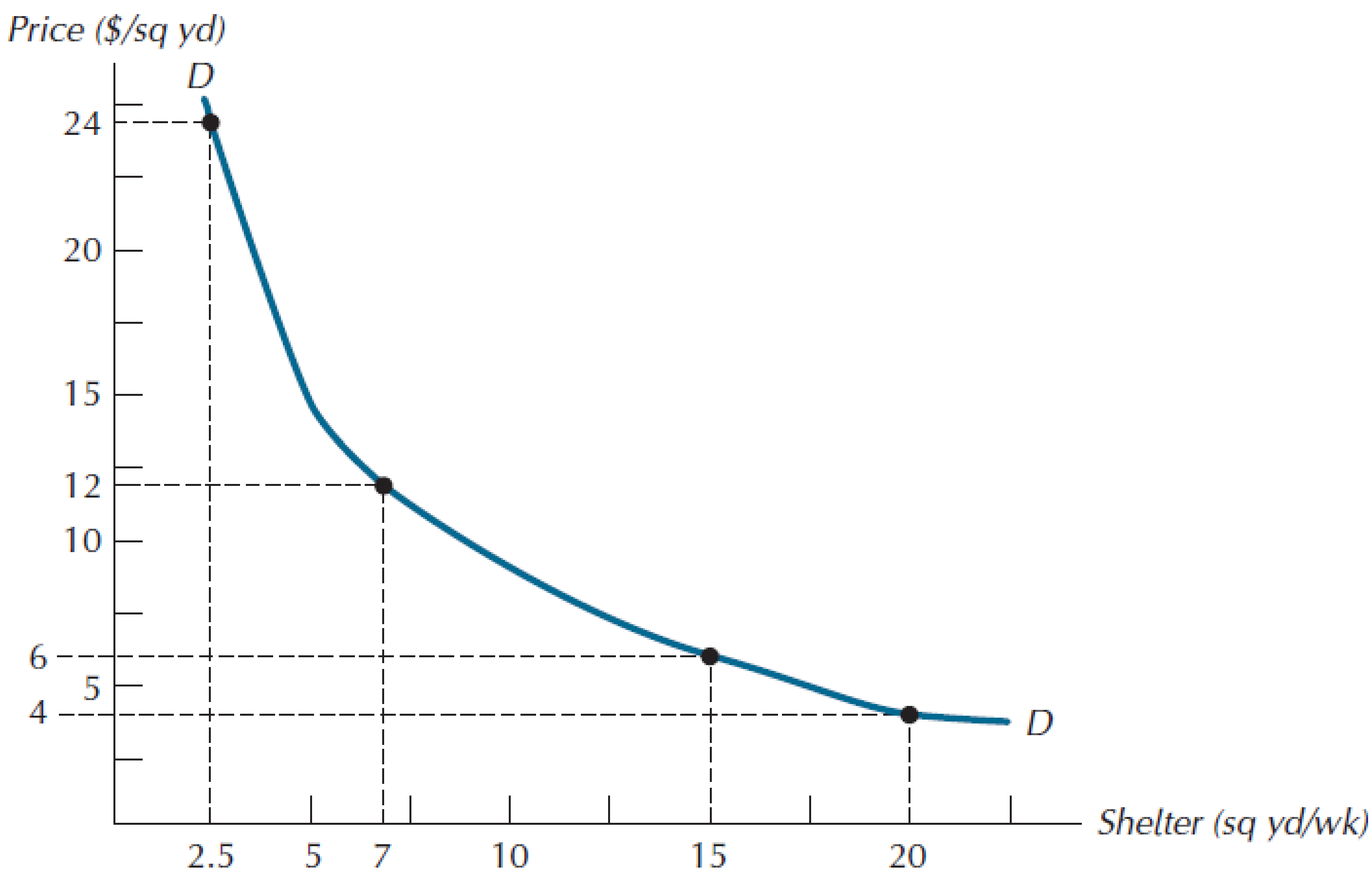


Figure 4.2: An Individual Consumer's Demand Curve



The Effects of Changes in Income

- ***Income-consumption curve (ICC):*** for a good X is the set of optimal bundles traced on an indifference map as income varies (holding the prices of X and Y constant).

- ***Engel curve:*** curve that plots the relationship between the quantity of X consumed and income.

The Effects of Changes in Income

- ***Normal good:*** one whose quantity demanded rises as income rises.

- ***Inferior good:*** one whose quantity demanded falls as income rises.

Figure 4.3: An Income-Consumption Curve

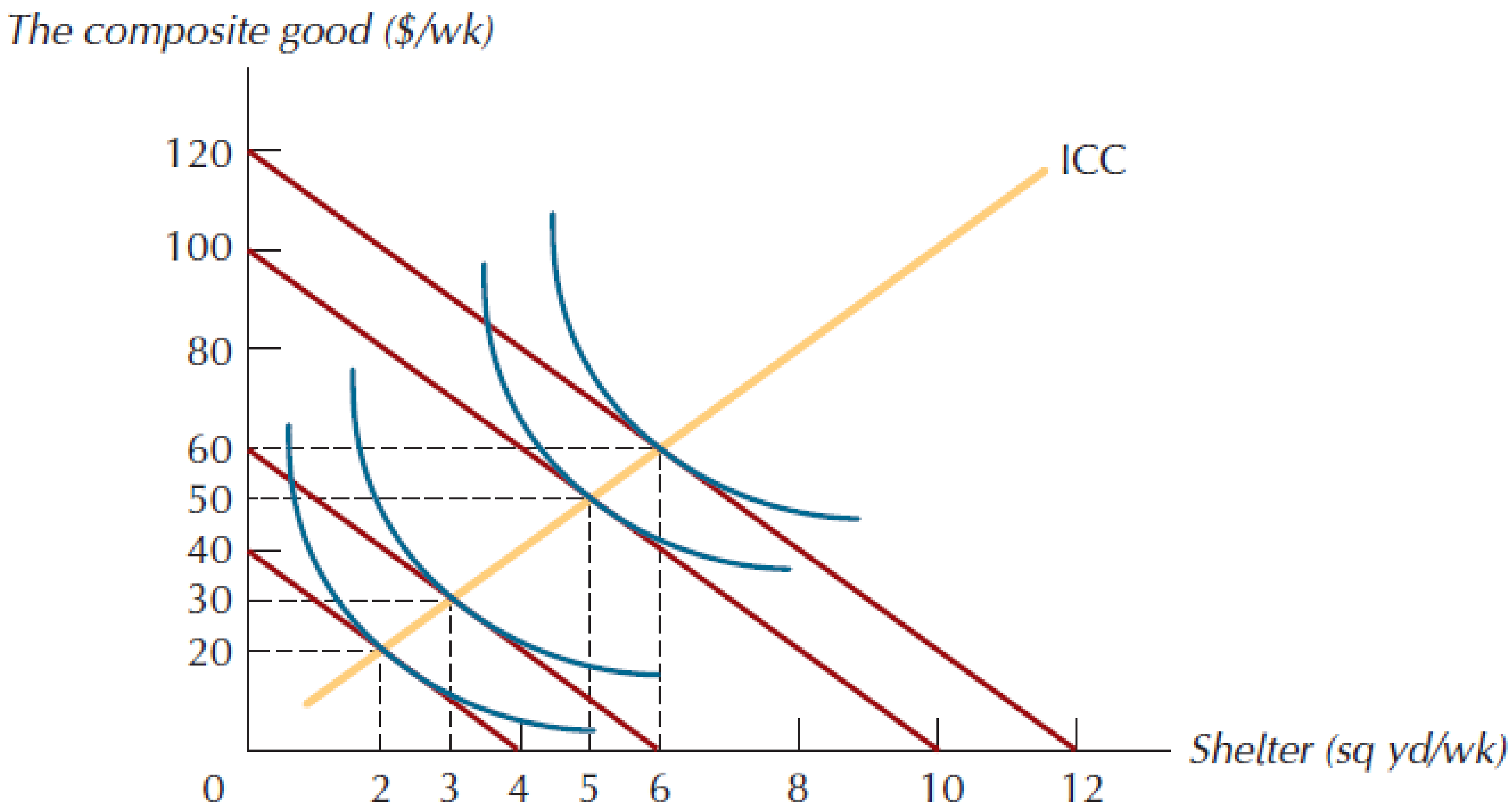


Figure 4.4: An Individual Consumer's Engel Curve

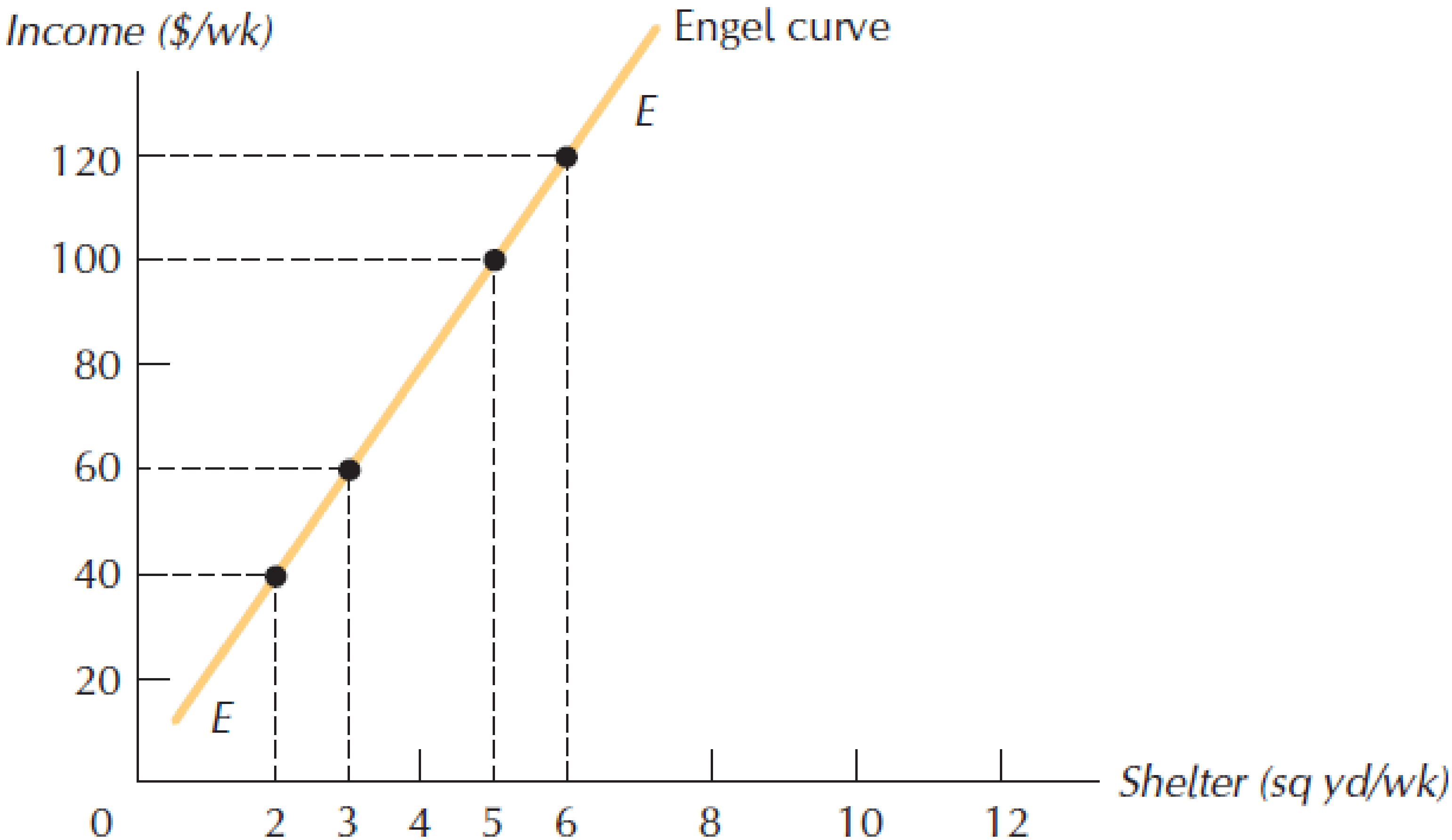
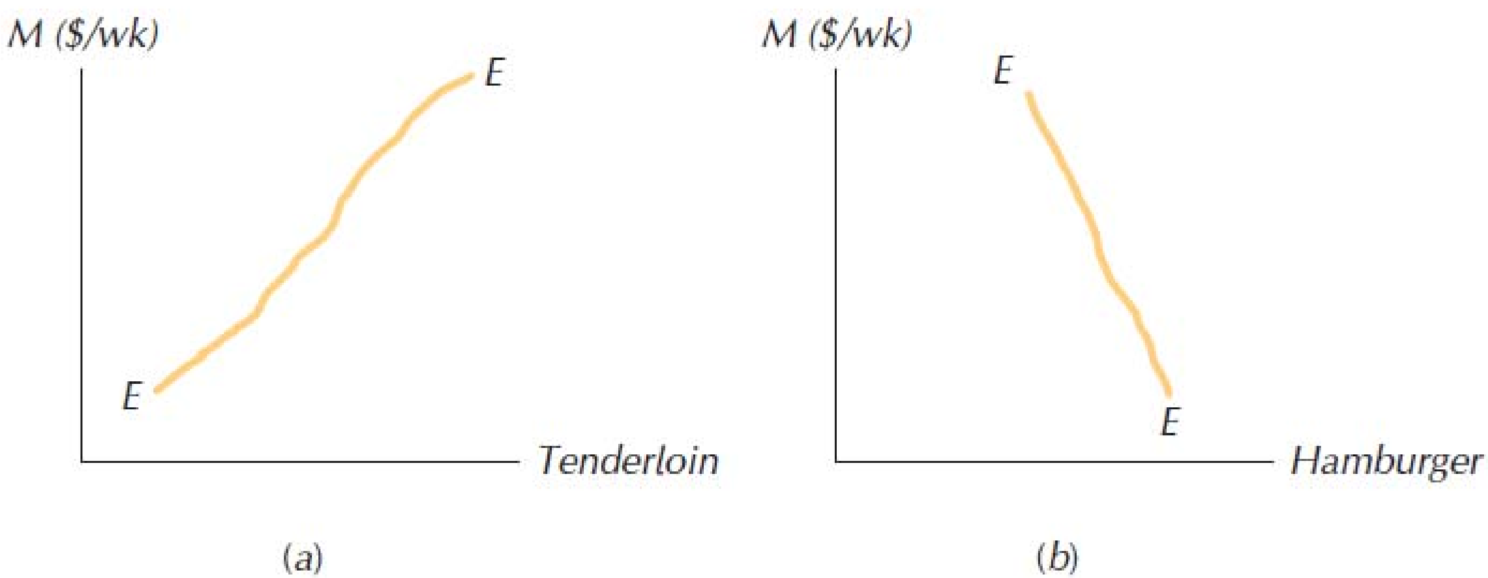


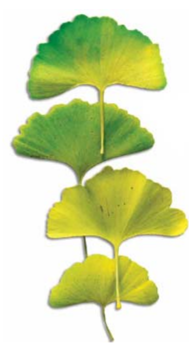
Figure 4.5: The Engel Curve for Normal and Inferior Goods



Income and Substitution Effects of a Price Change

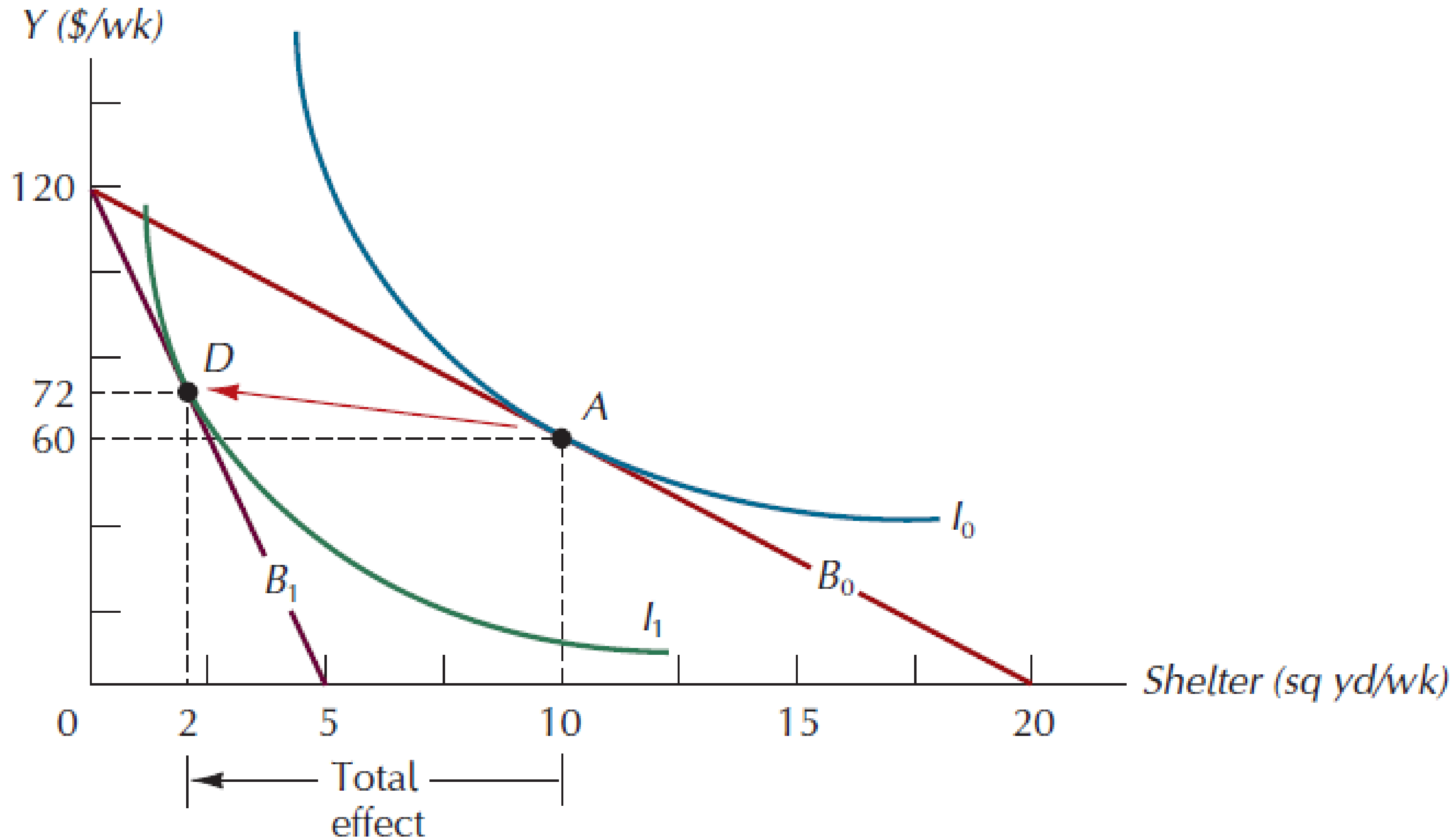
- ***Substitution effect:*** that component of the total effect of a price change that results from the associated change in the relative attractiveness of other goods.

- ***Income effect:*** that component of the total effect of a price change that results from the associated change in real purchasing power.



- ***Total effect:*** the sum of the substitution and income effects.

Figure 4.6: The Total Effect of a Price Increase



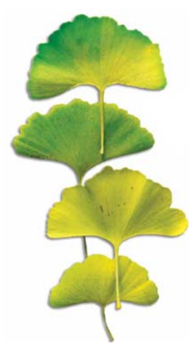


Figure 4.7: The Substitution and Income Effects of a Price Change

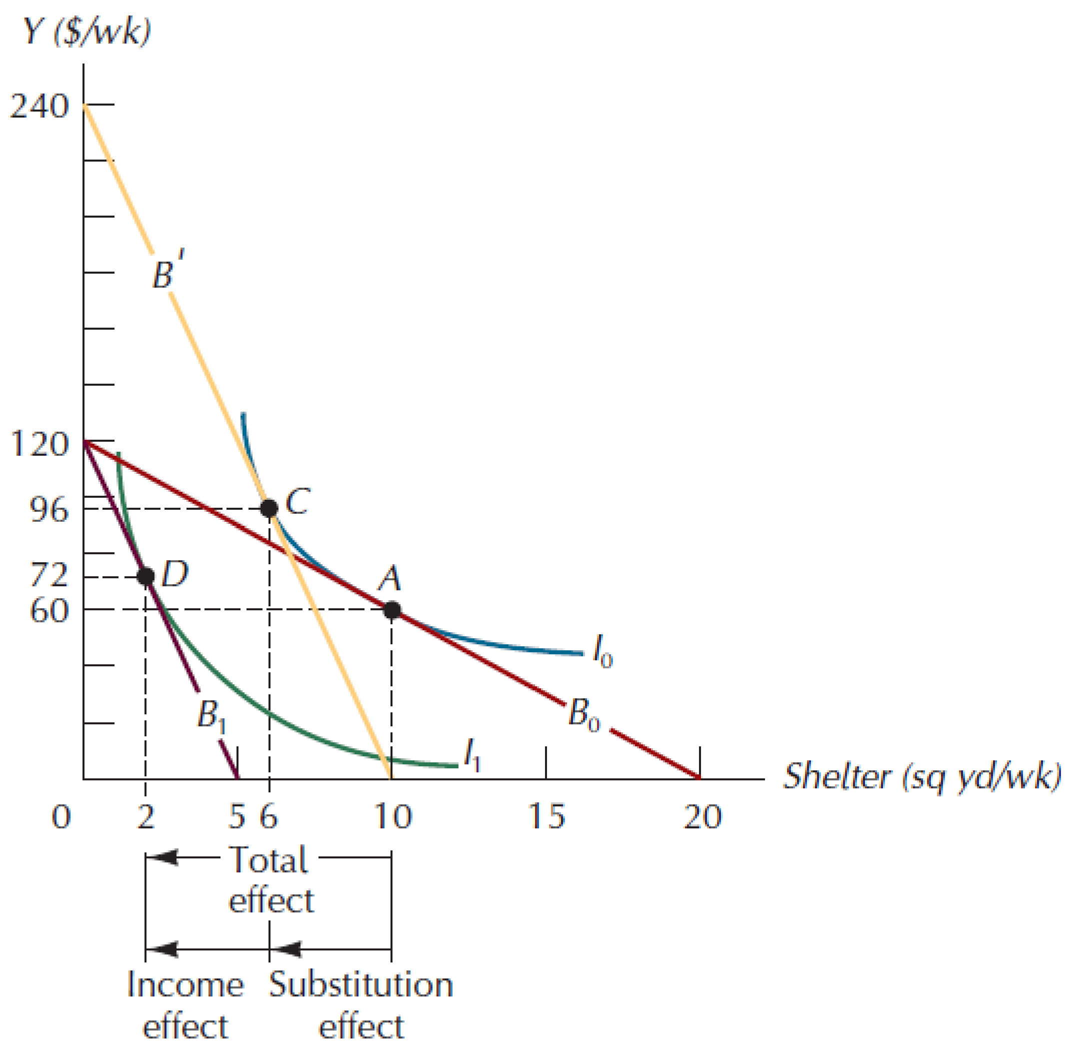
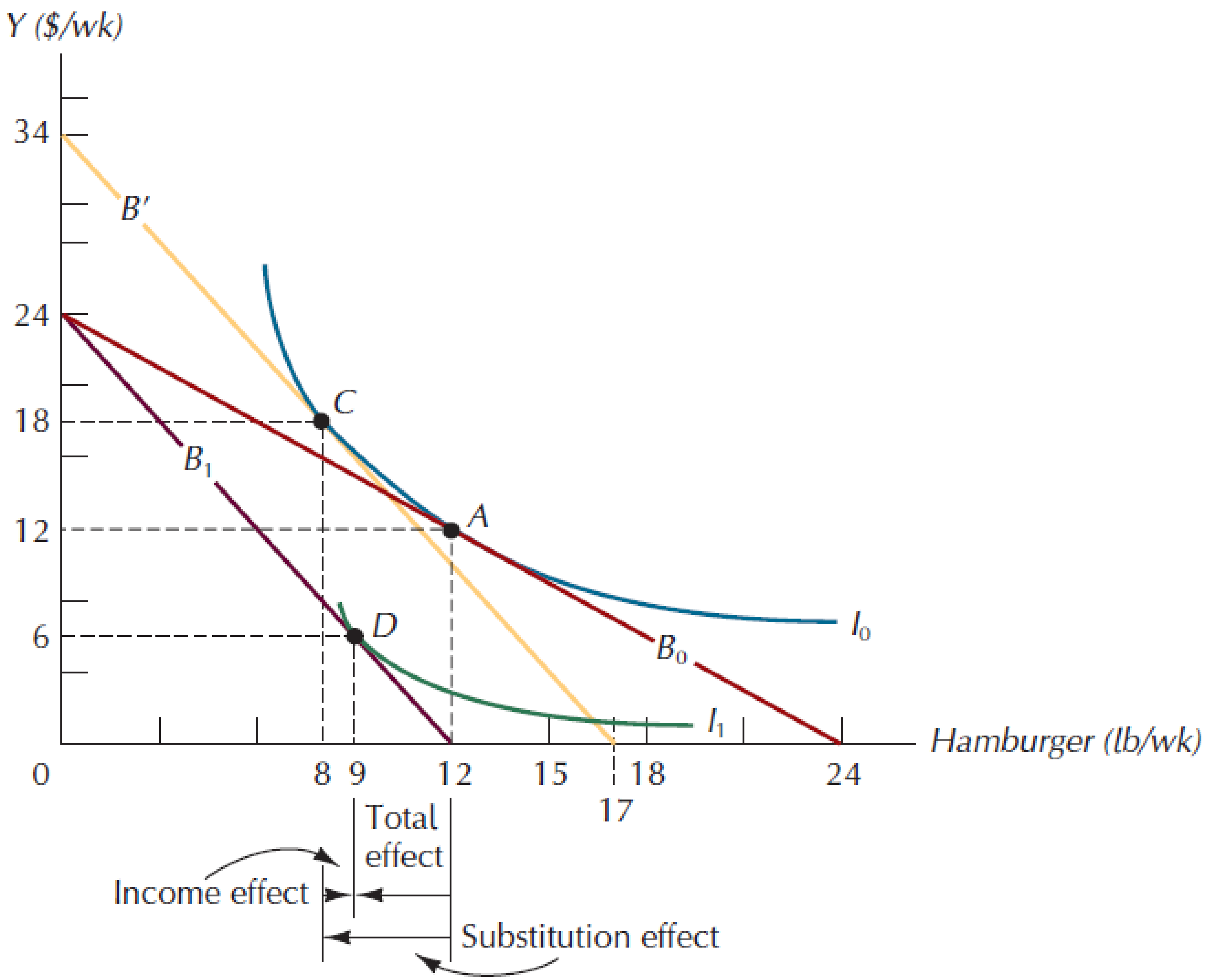
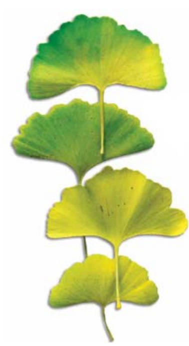


Figure 4.8: Income and Substitution Effects for an Inferior Good





Giffen Goods

- ***Giffen good:*** one for which the quantity demanded rises as its price rises.
  - The Giffen good must be an inferior good

Figure 4.9: The Demand Curve for a Giffen Good

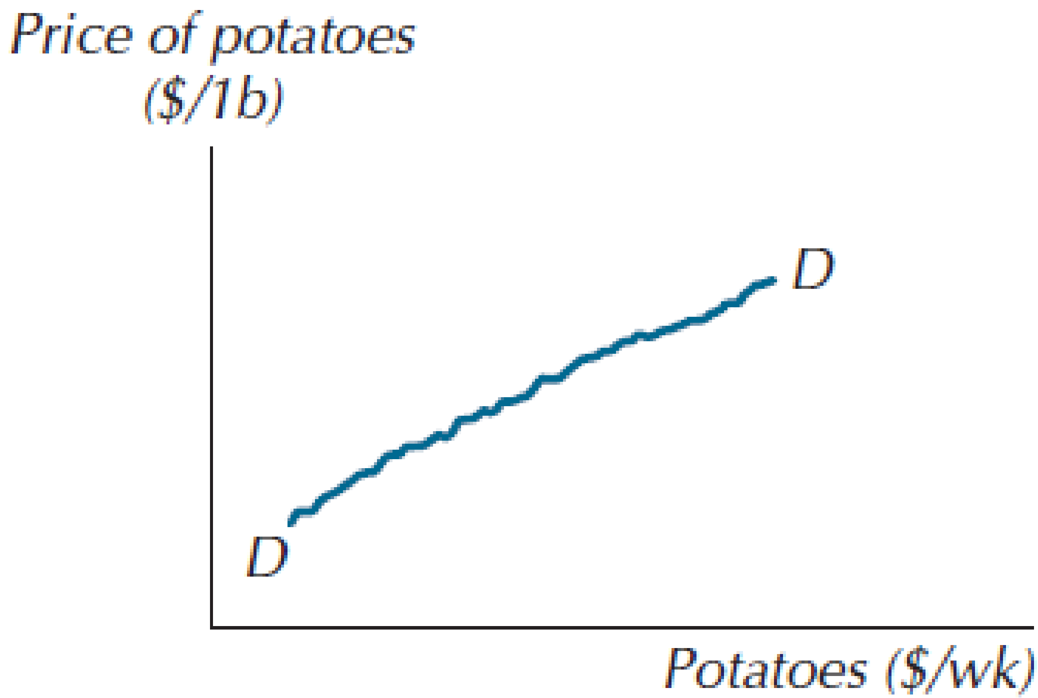


Figure 4.10: Income and Substitution Effects for Perfect Complements

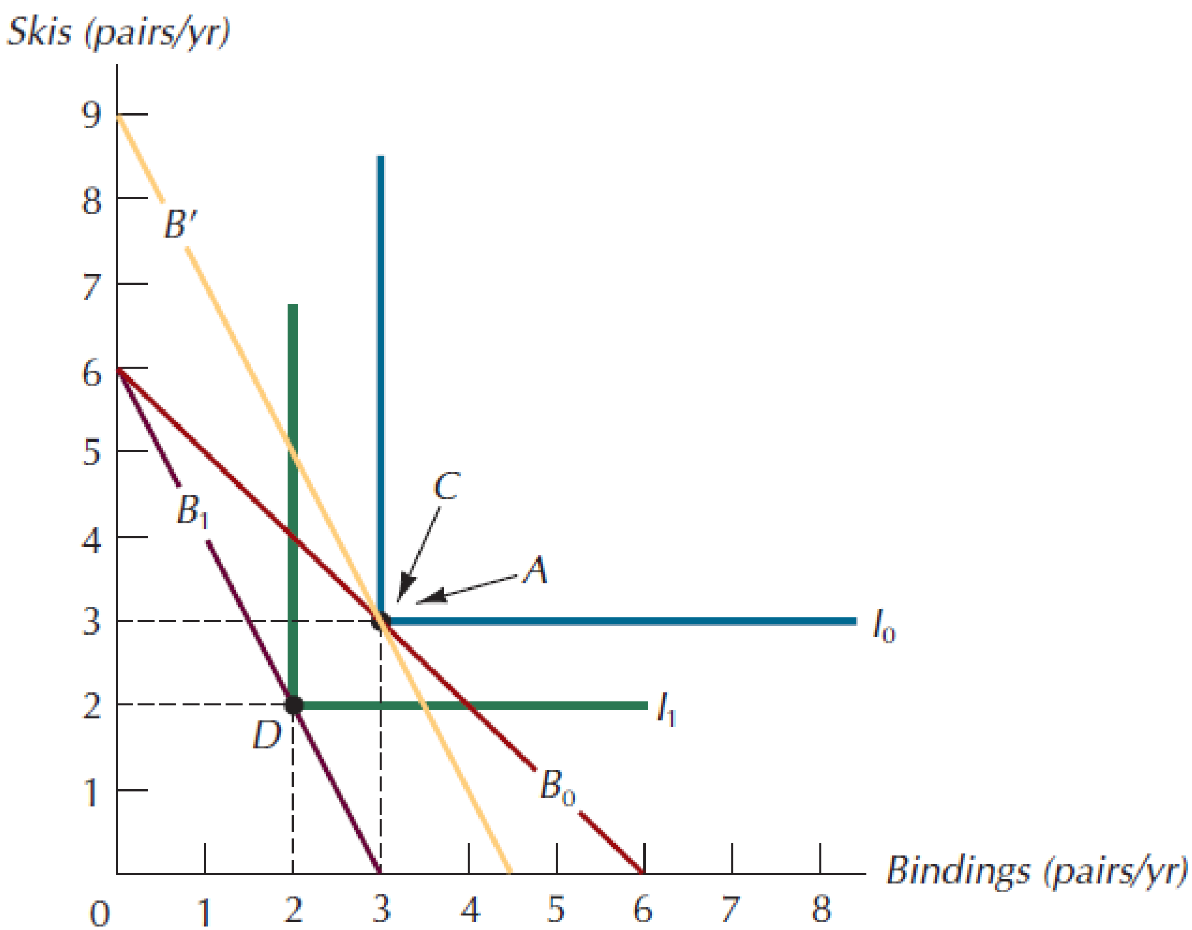


Figure 4.11: Income and Substitution Effects for Perfect Substitutes

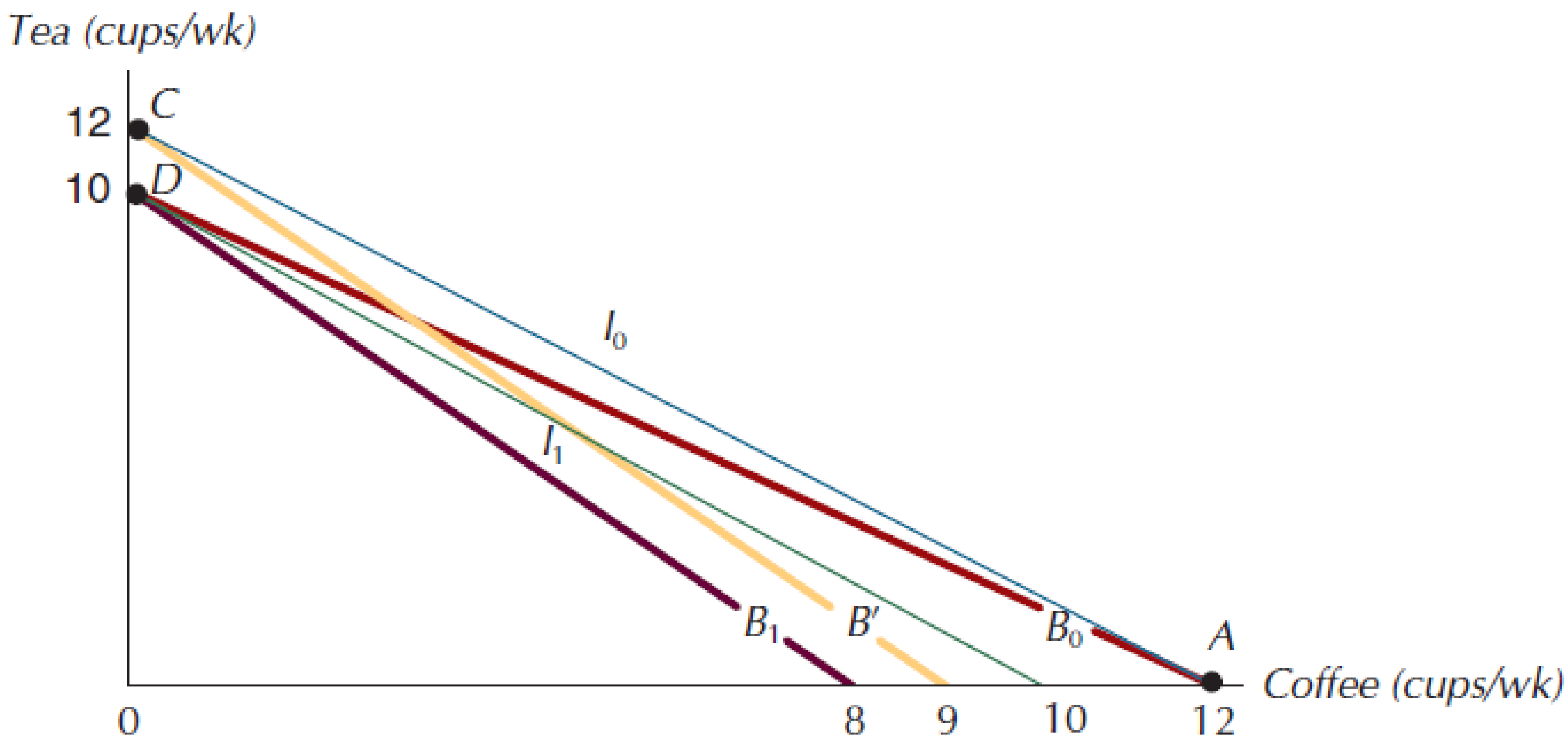


Figure 4.12: Income and Substitution Effects of a Price Increase for Salt

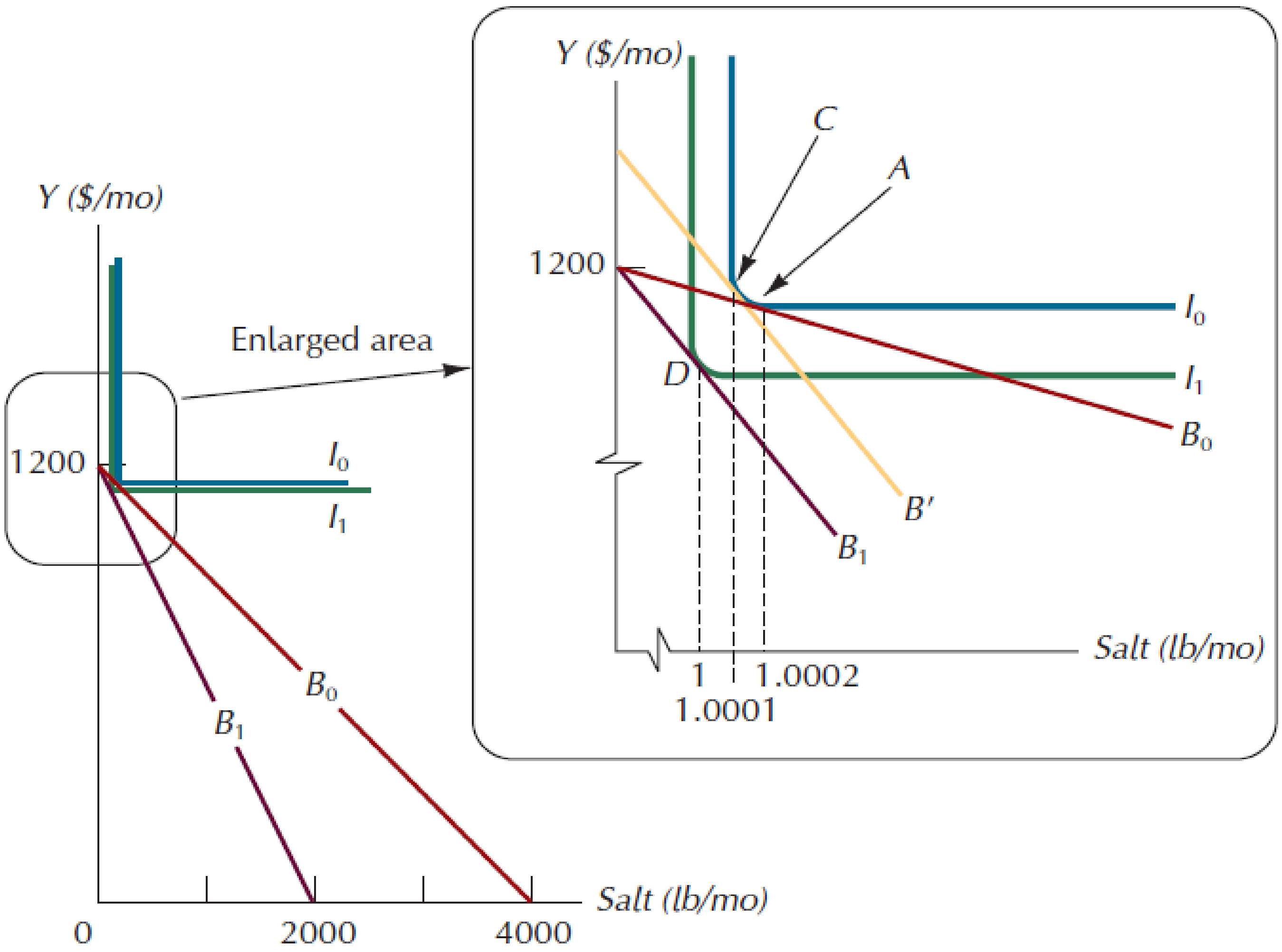


Figure 4.13: Income and Substitution Effects for a Price-Sensitive Good

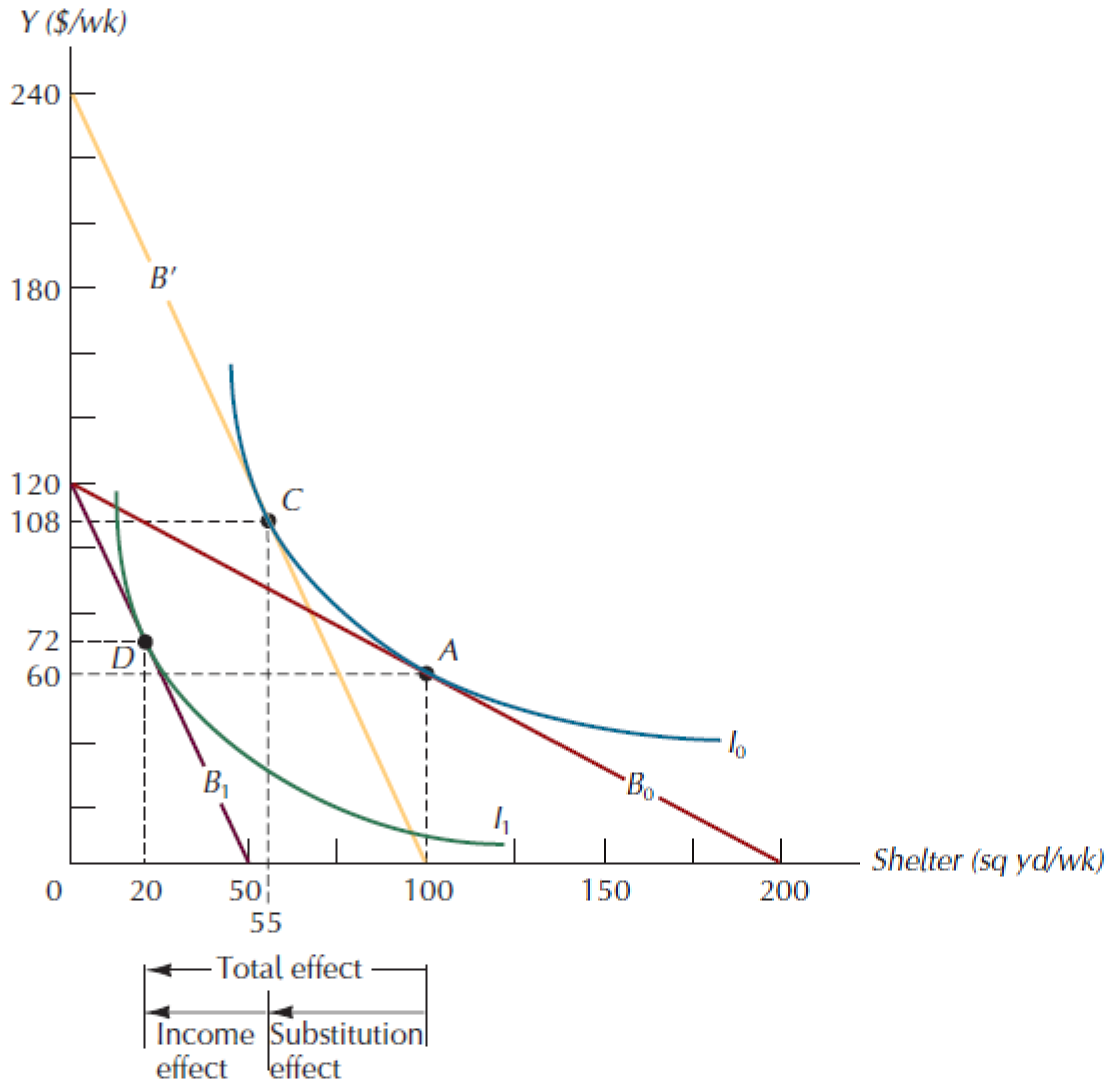


Figure 4.14: A Price Increase for Car Washes

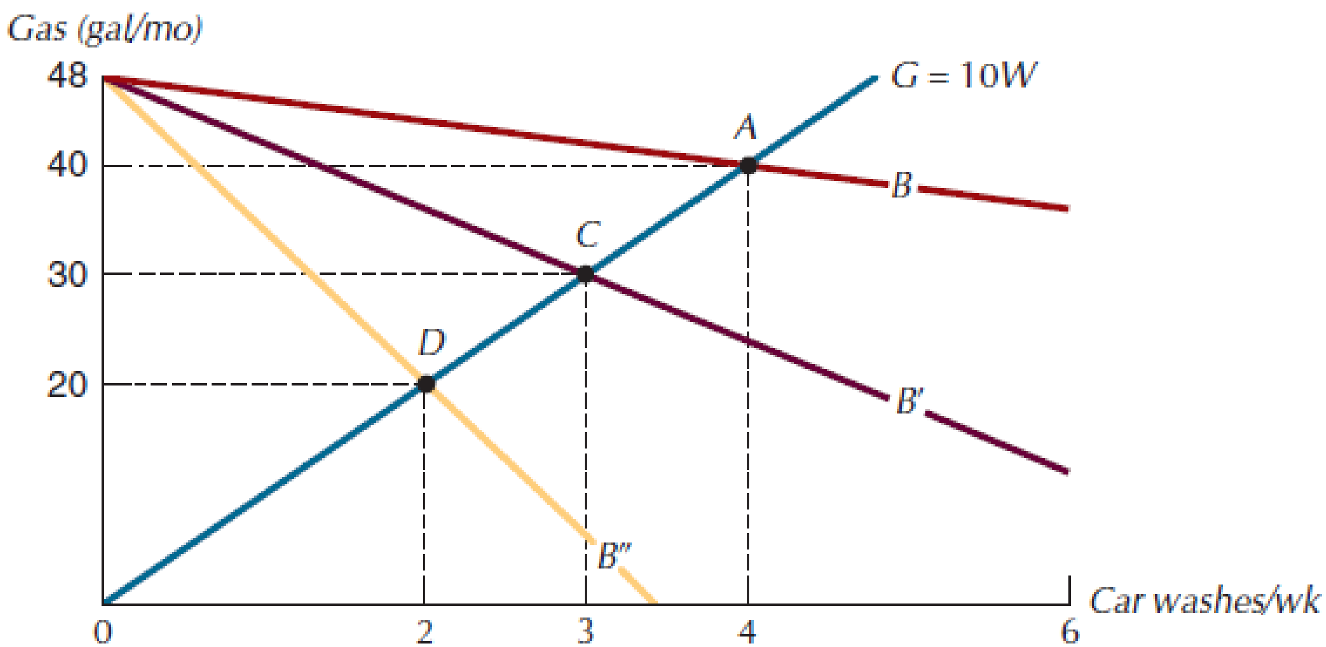
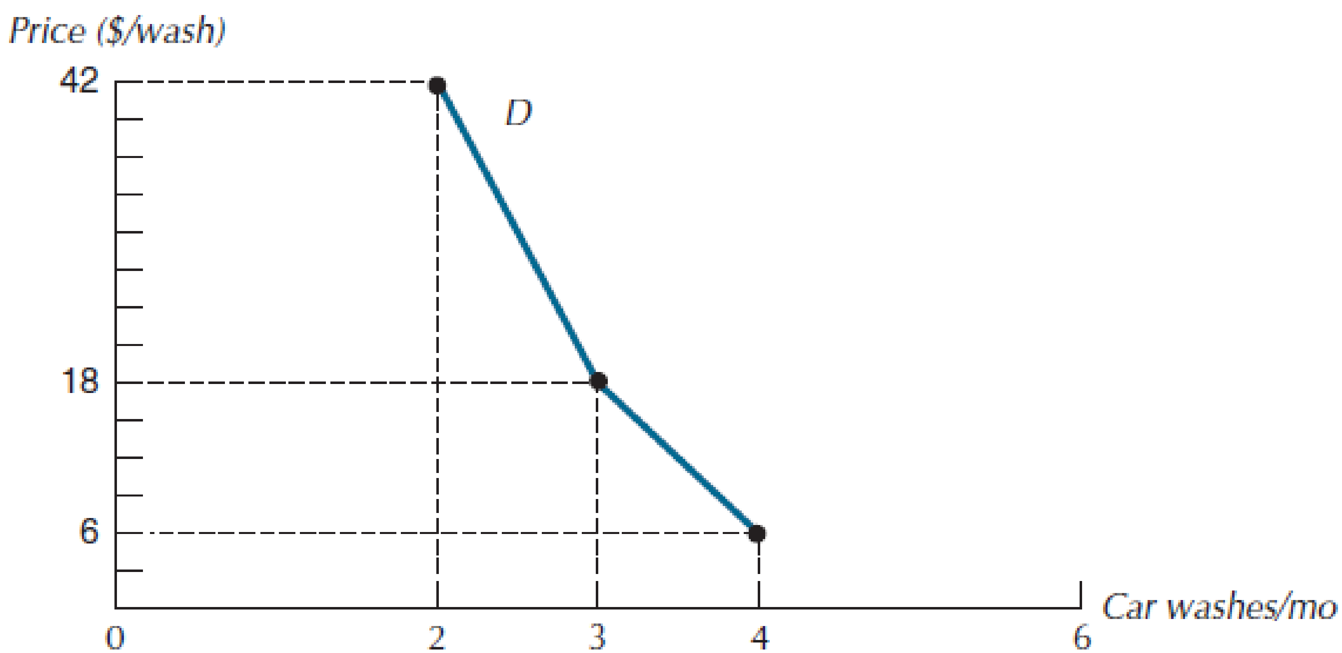


Figure 4.15: James' Demand for Car Washes



Market Demand Curves

- ***Market demand curve:*** the horizontal summation of the individual demand curves.

Figure 4.16: Generating Market Demand from Individual Demands

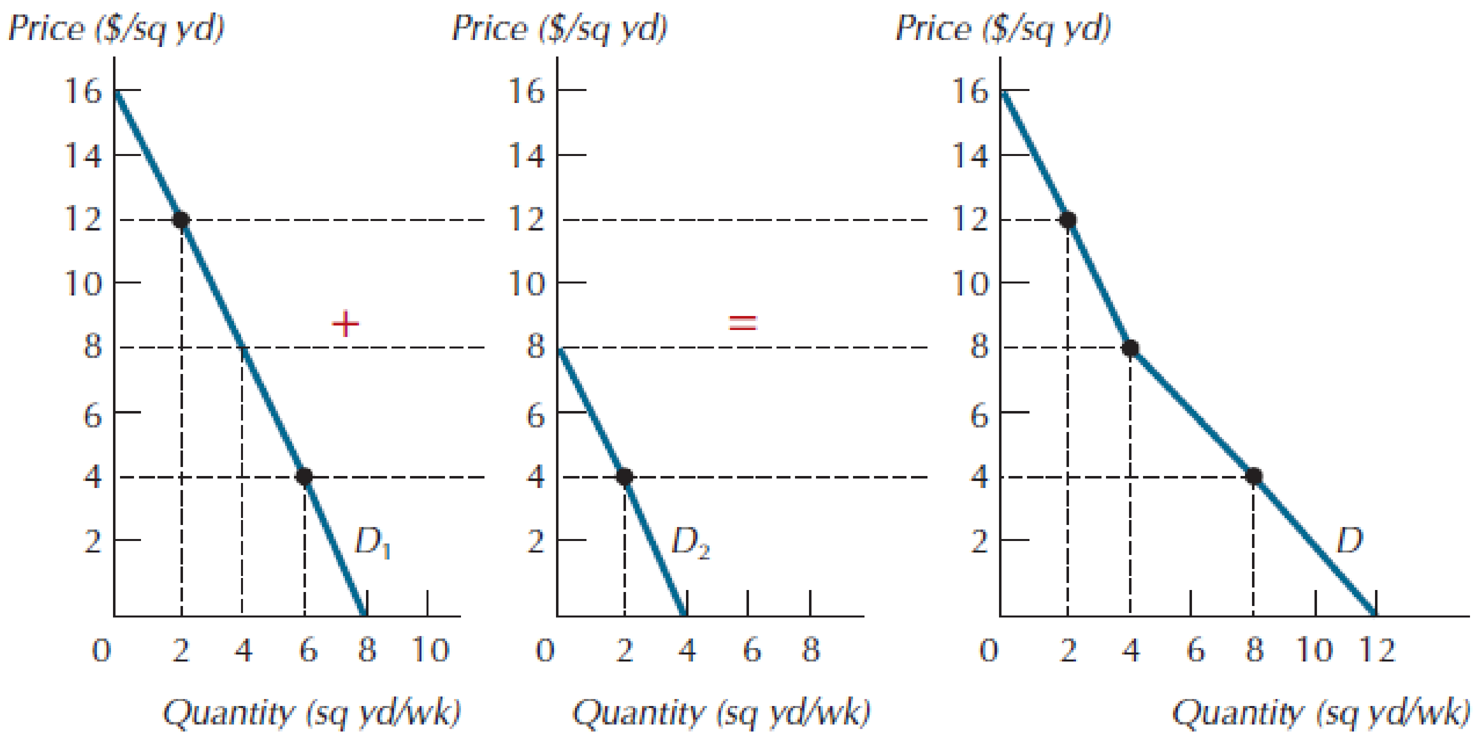
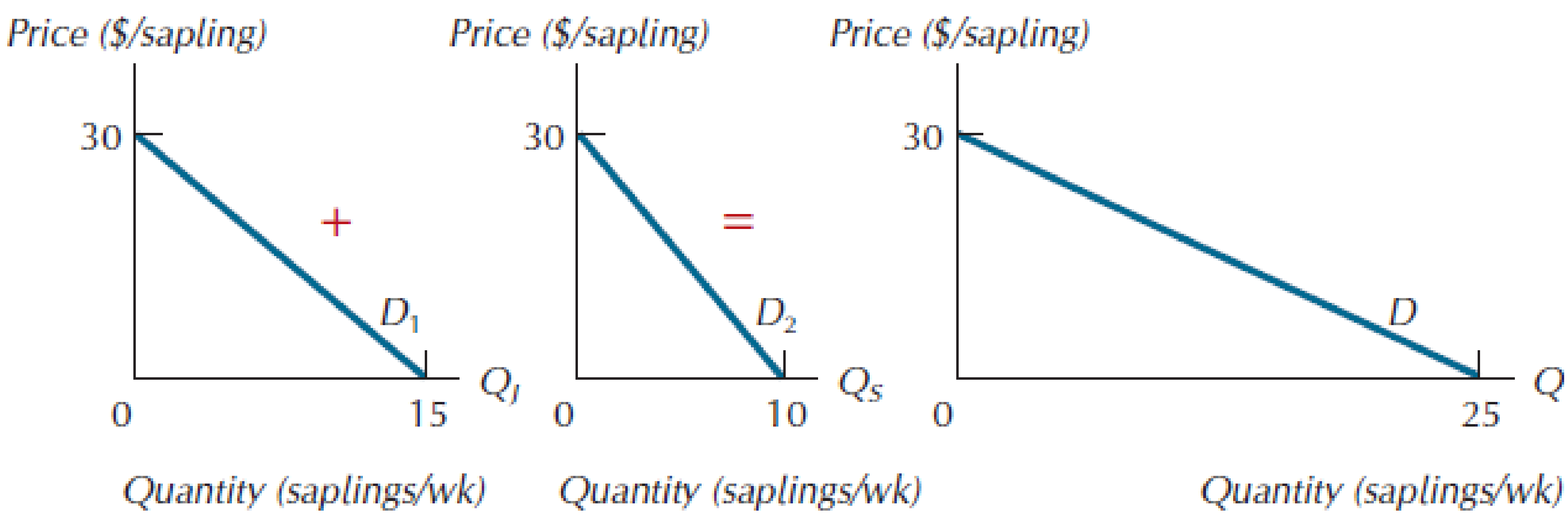


Figure 4.17: The Market Demand Curve for Beech Saplings



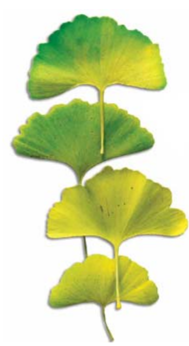
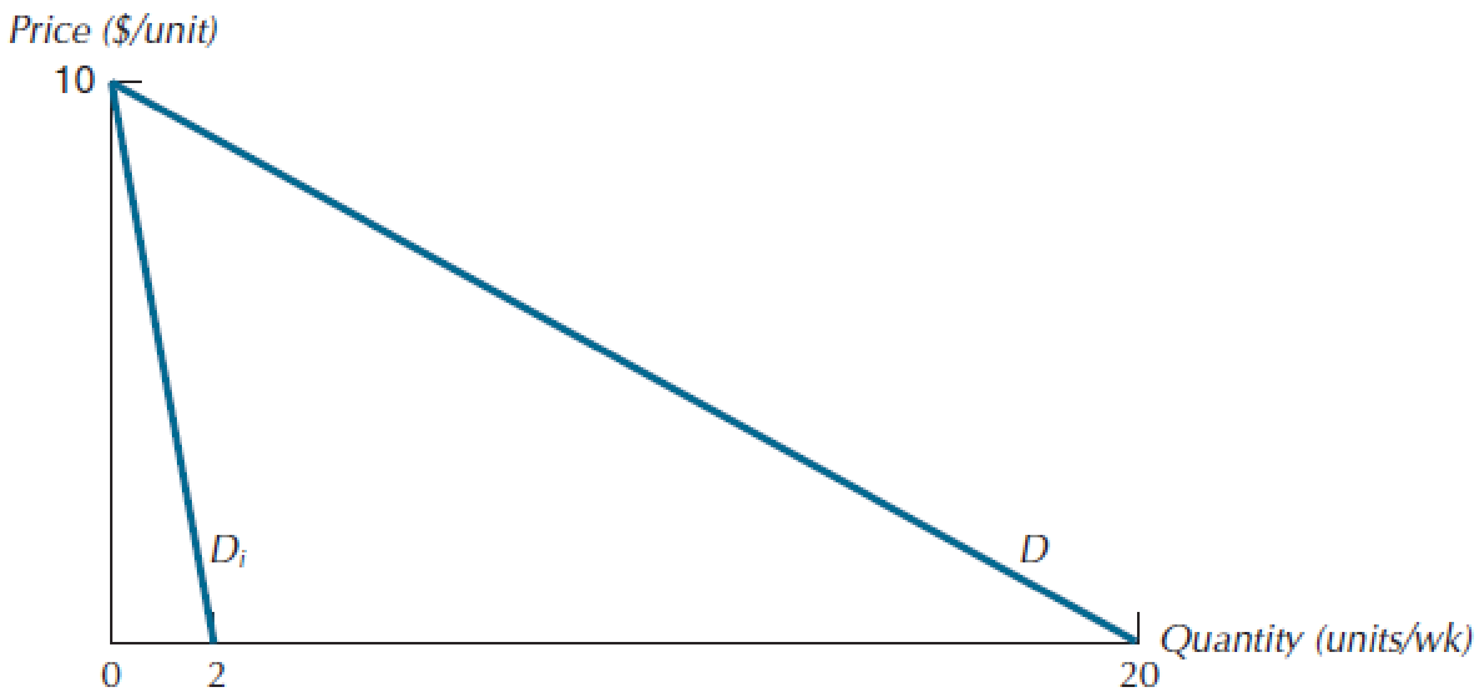


Figure 4.18: Market Demand with Identical Consumers



Price Elasticity of Demand

- ***Price elasticity of demand:*** the present age change in the quantity of a good demanded that result from a 1 present change in its price.

Three Categories of Price Elasticity

- Elastic → € < -1
- Inelastic → € > -1
- Unit elastic → € = 1

Figure 4.19: Three Categories of Price Elasticity

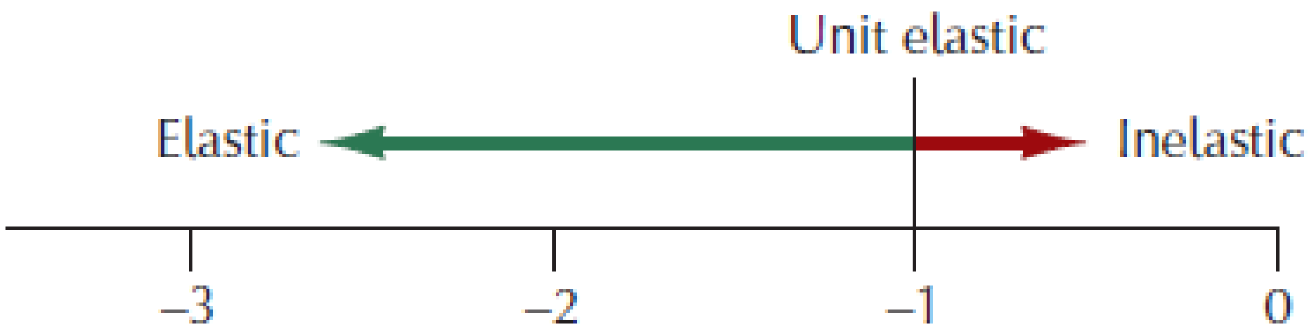


Figure 4.20: The Point-Slope Method

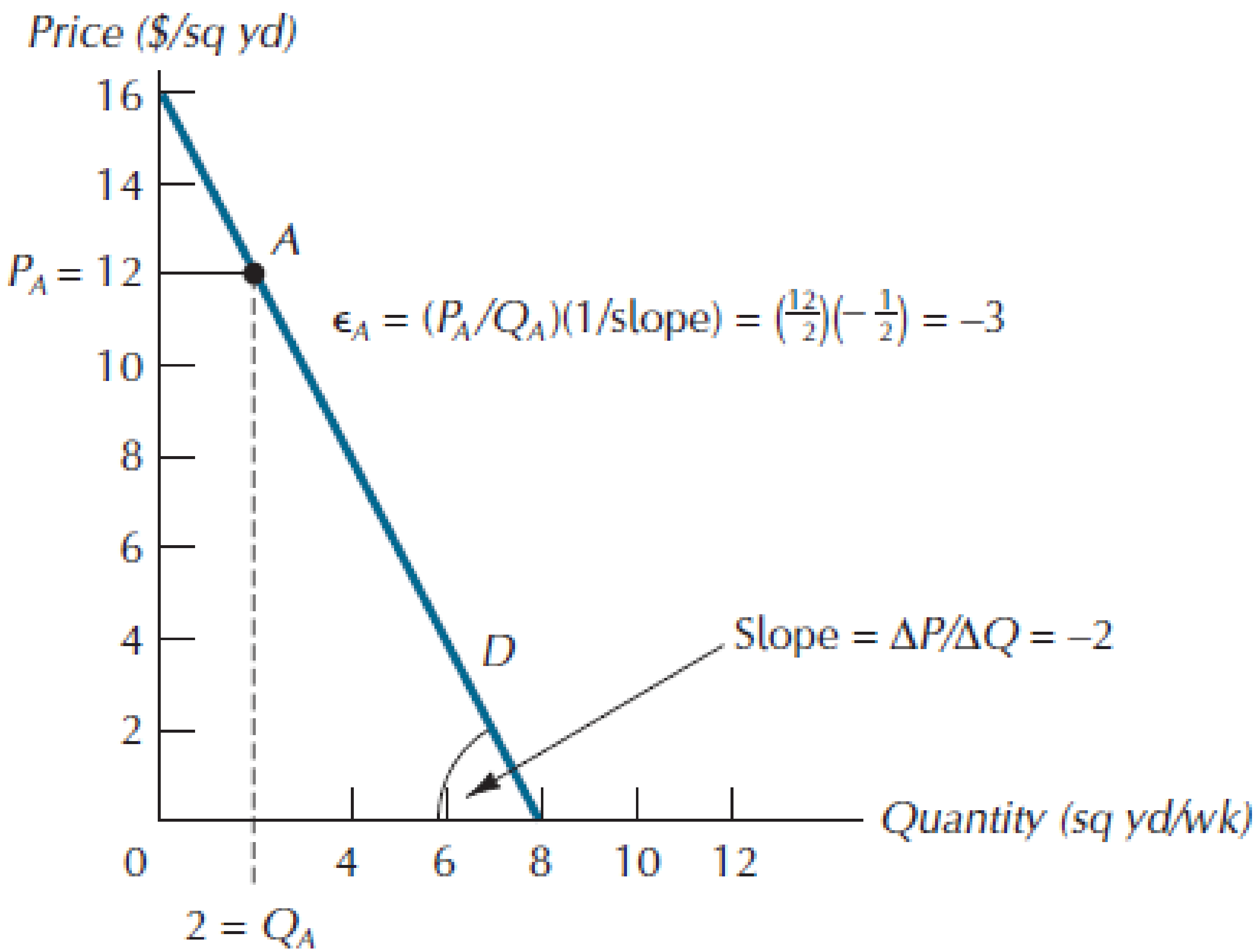
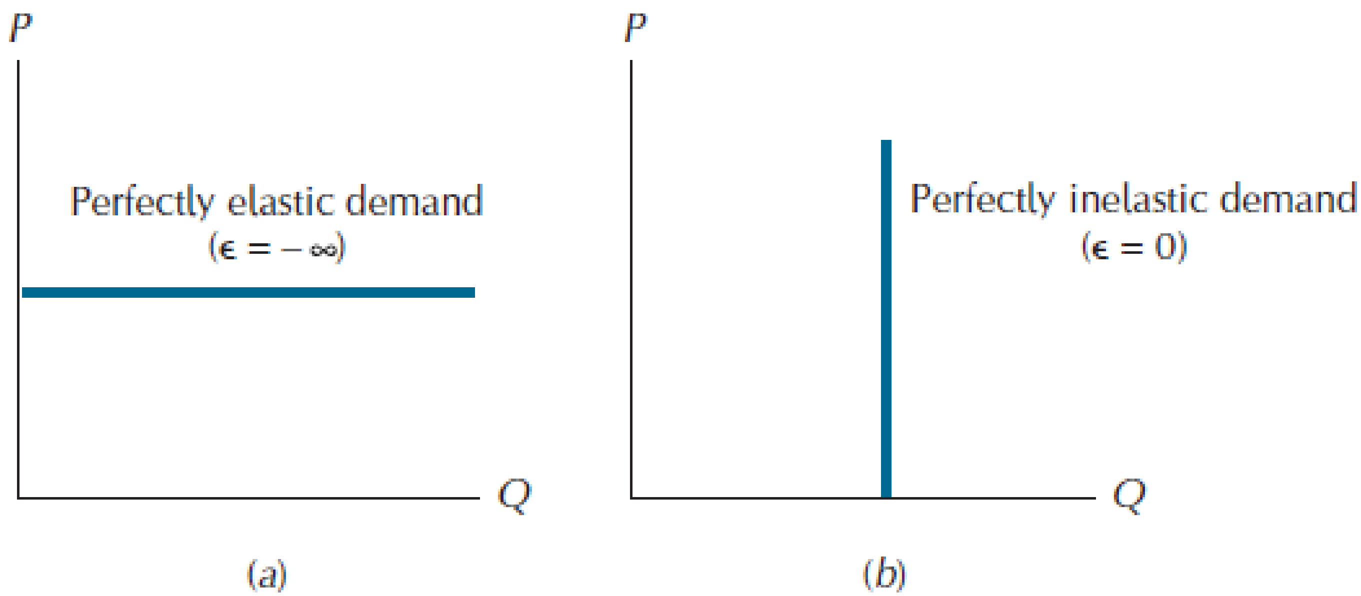


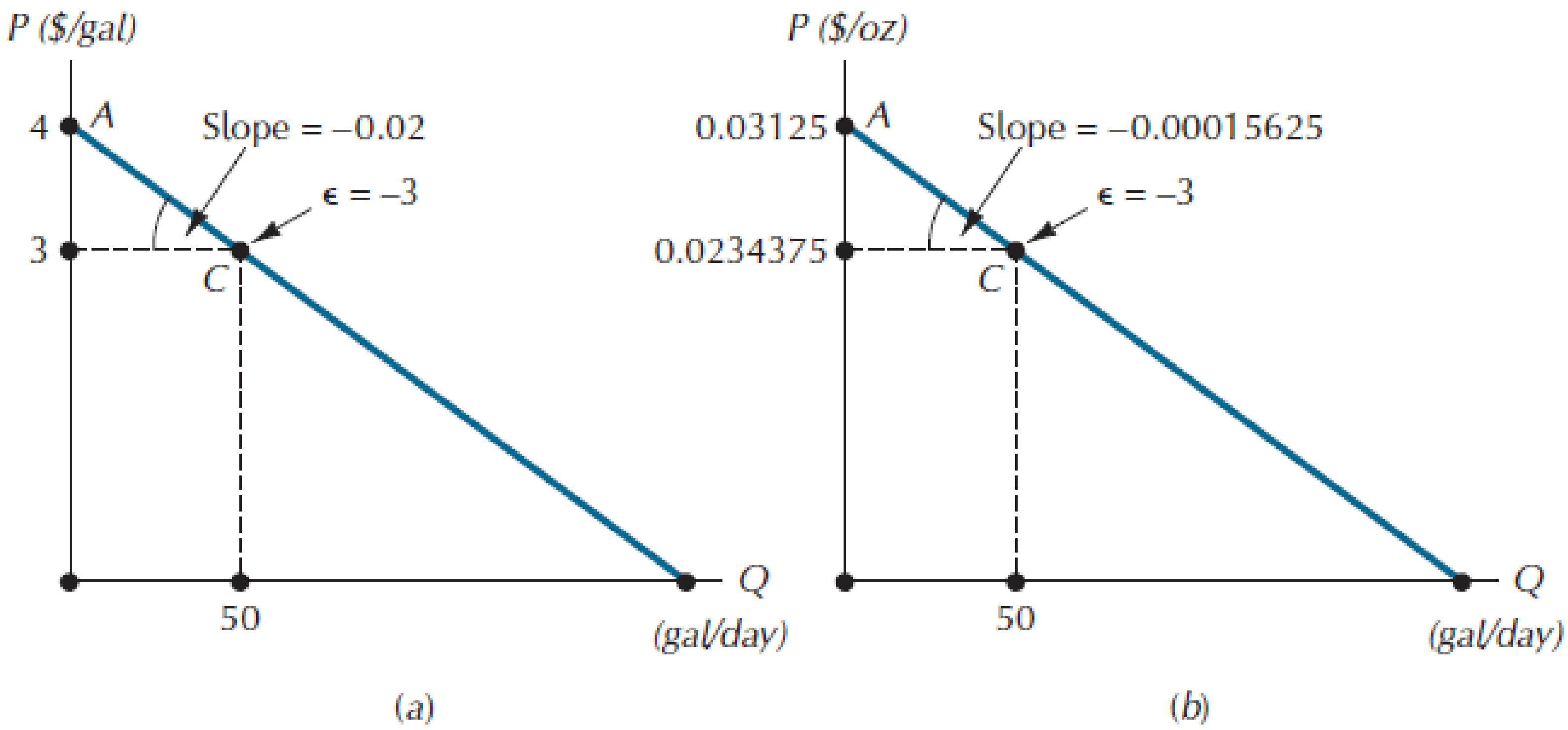
Figure 4.21: Two Important Polar Cases



The Unit-Free Property of Elasticity

- When weighing costs and benefits, always compare absolute dollar amounts, not proportions.
- When describing how quantity demanded responds to changes in price, it’s generally best to speak in terms of proportions.

Figure 4.22: Elasticity is Unit-Free



Elasticity and Total Revenue

- A price reduction will increase total revenue if and only if the absolute value of the price elasticity of demand is greater than 1.

- An increase in price will increase total revenue if and only if the absolute value of the price elasticity is less than 1.

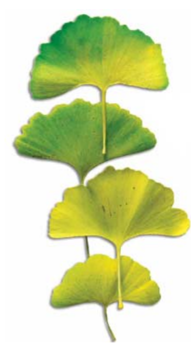


Figure 4.23: The Effect on Total Expenditure of a Reduction in Price

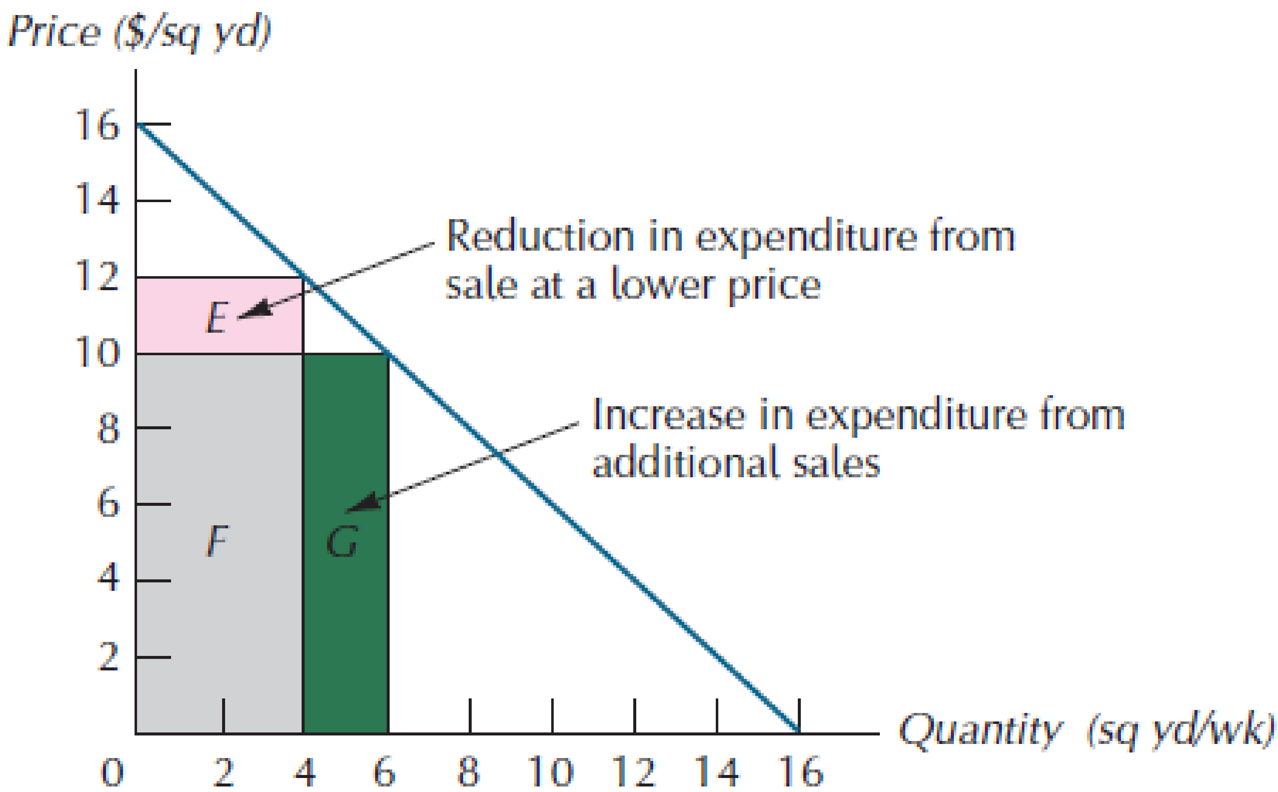


Figure 4.24: Demand and Total Expenditure

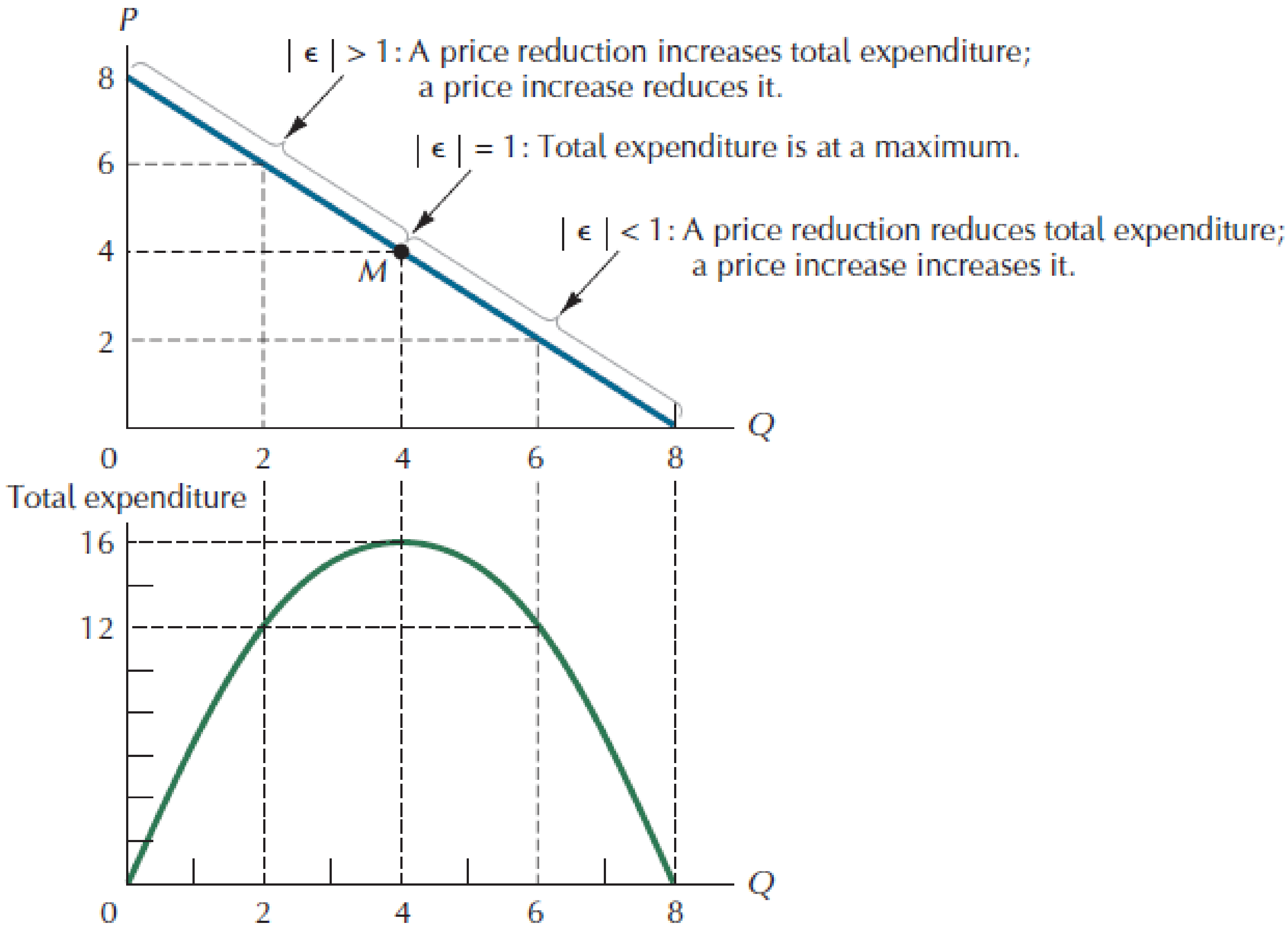
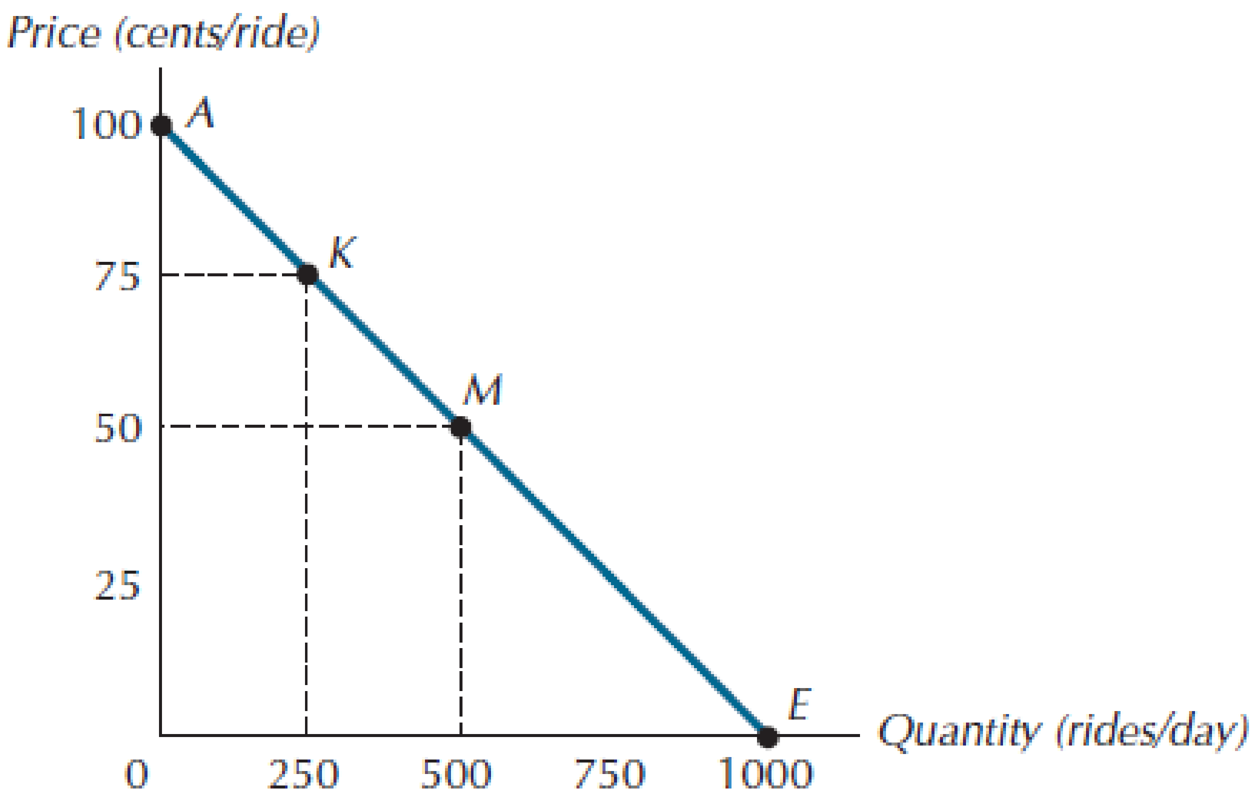


Figure 4.25: The Demand for Bus Rides



Determinants of Price Elasticity of Demand

- ***Substitution possibilities:*** the substitution effect of a price change tends to be small for goods with no close substitutes.

- ***Budget share:*** the larger the share of total expenditures accounted for by the product, the more important will be the income effect of a price change.

- ***Direction of income effect:*** a normal good will have a higher price elasticity than an inferior good.

- ***Time:*** demand for a good will be more responsive to price in the long-run than in the short-run.

Figure 4.26: Price Elasticity Is Greater in the Long Run than in the Short Run

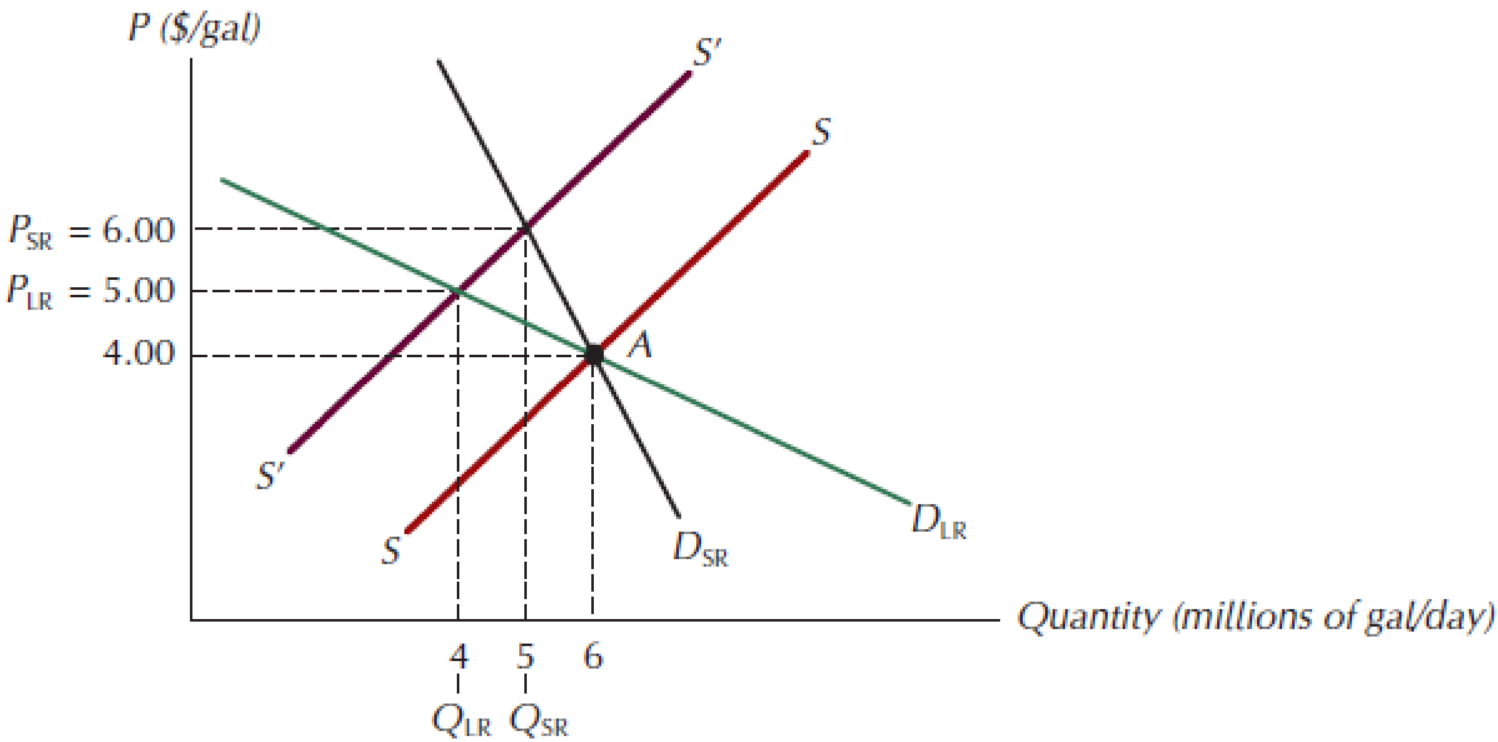


Figure 4.27: The Engel Curve for Food of A and B

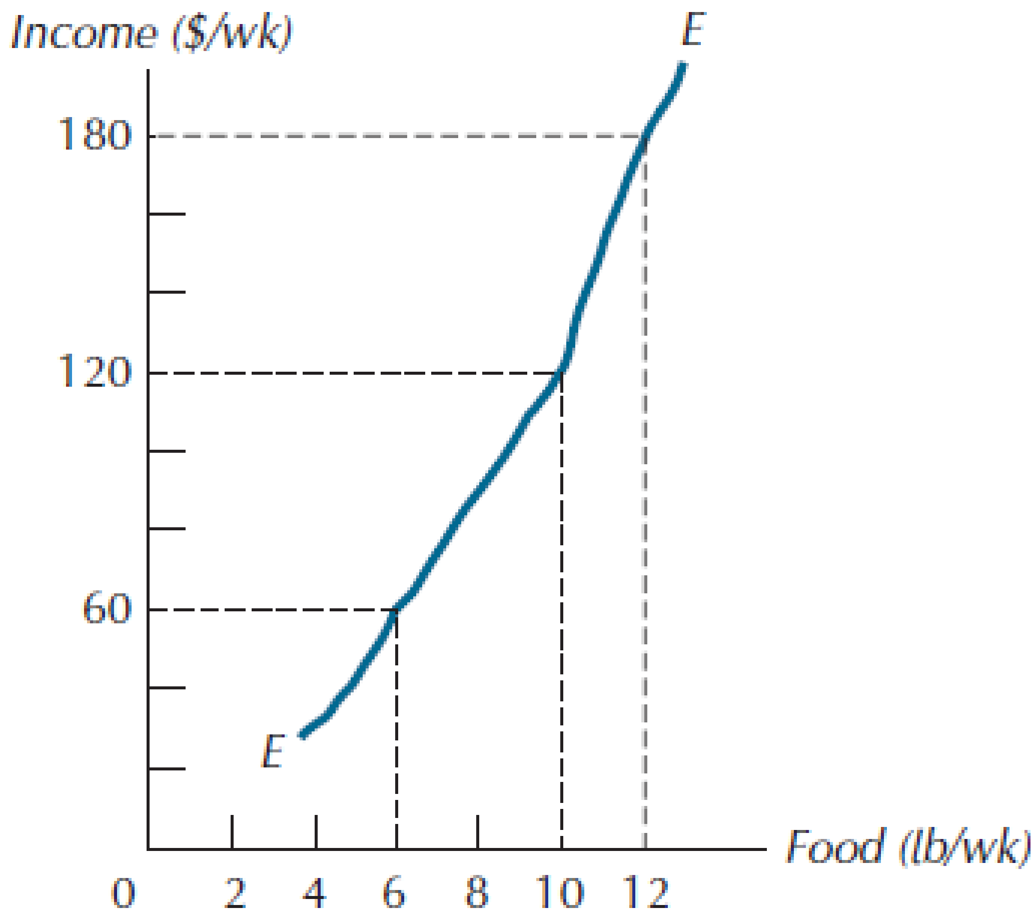


Figure 4.28: Market Demand Sometimes Depends on the Distribution of Income

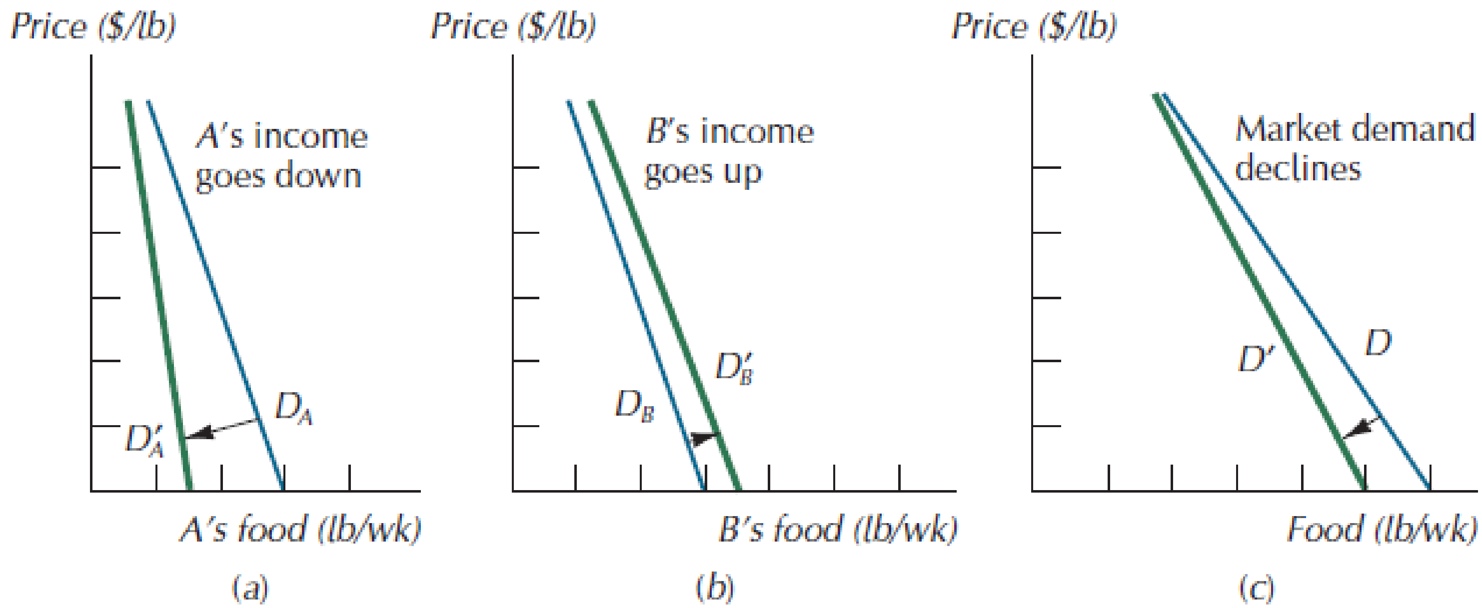
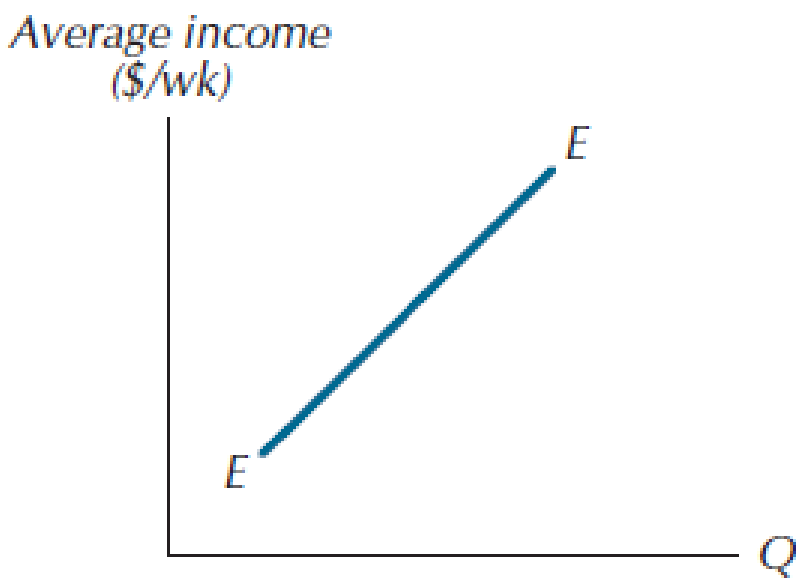


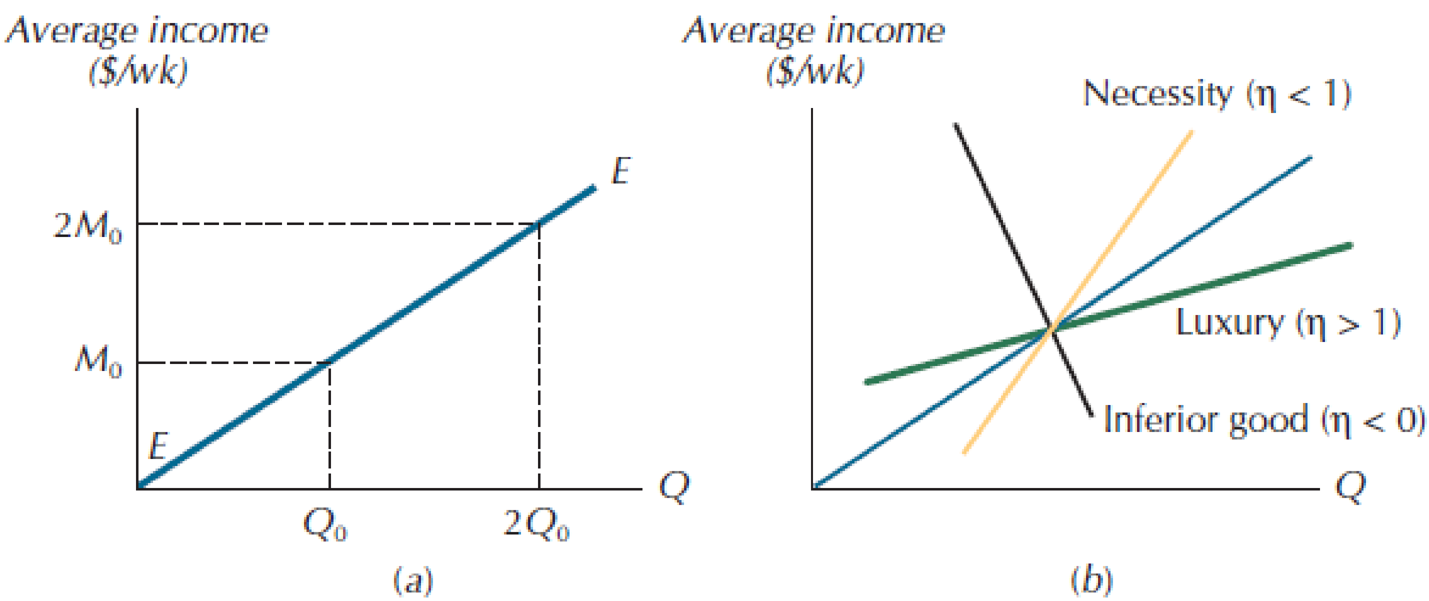
Figure 4.29: An Engel Curve at the Market Level



Income Elasticity of Demand

- If a good exhibits a stable Engle curve, we can define its **income elasticity of demand**, the percentage change in the quantity of a good demanded that results from a 1 percent change in income.

Figure 4.30: Engel Curves for Different Types of Goods



Cross-Price Elasticities of Demand

- ***Cross-price elasticity of demand***: the percentage change in the quantity of one good demanded that results from a 1 percent change in the price of the other good.

Figure A4.1: A Constant Elasticity Demand Curve

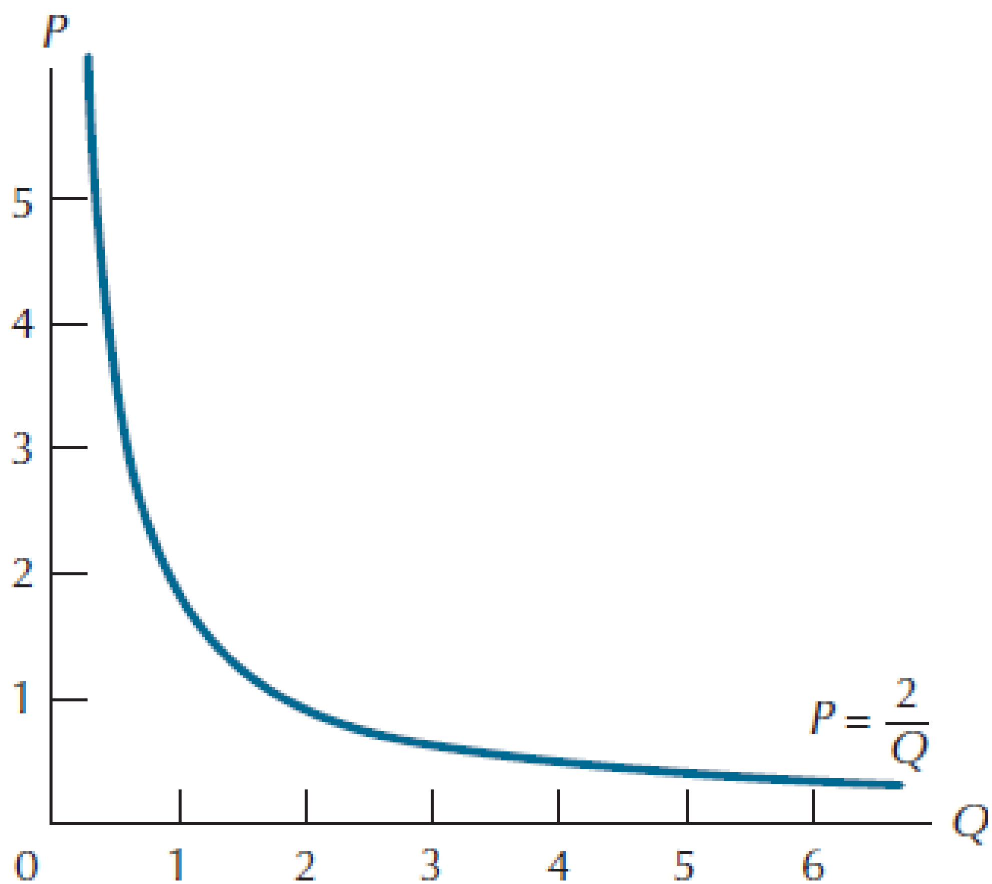


Figure A4.2: The Segment-Ratio Method

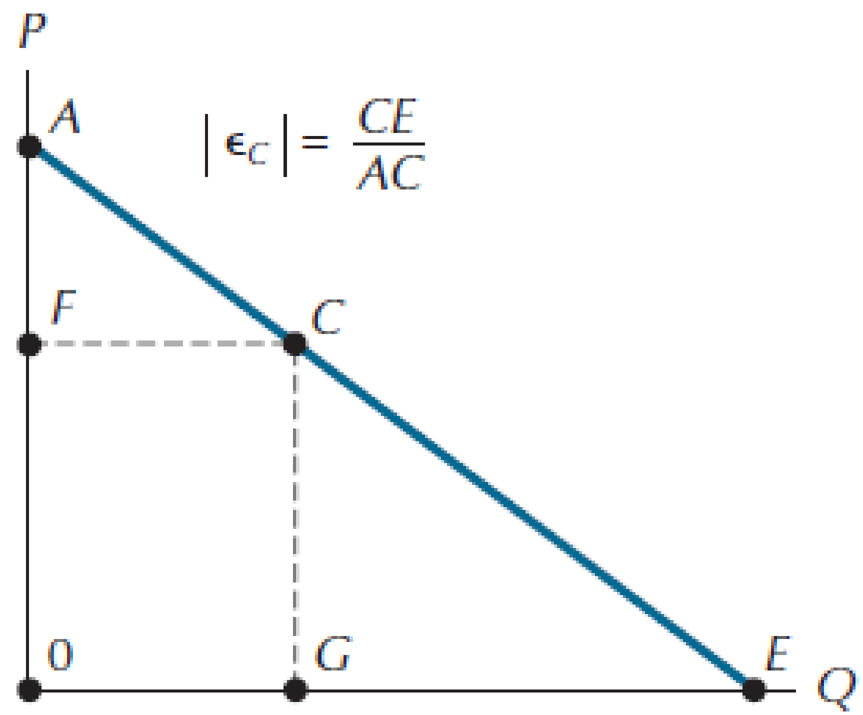
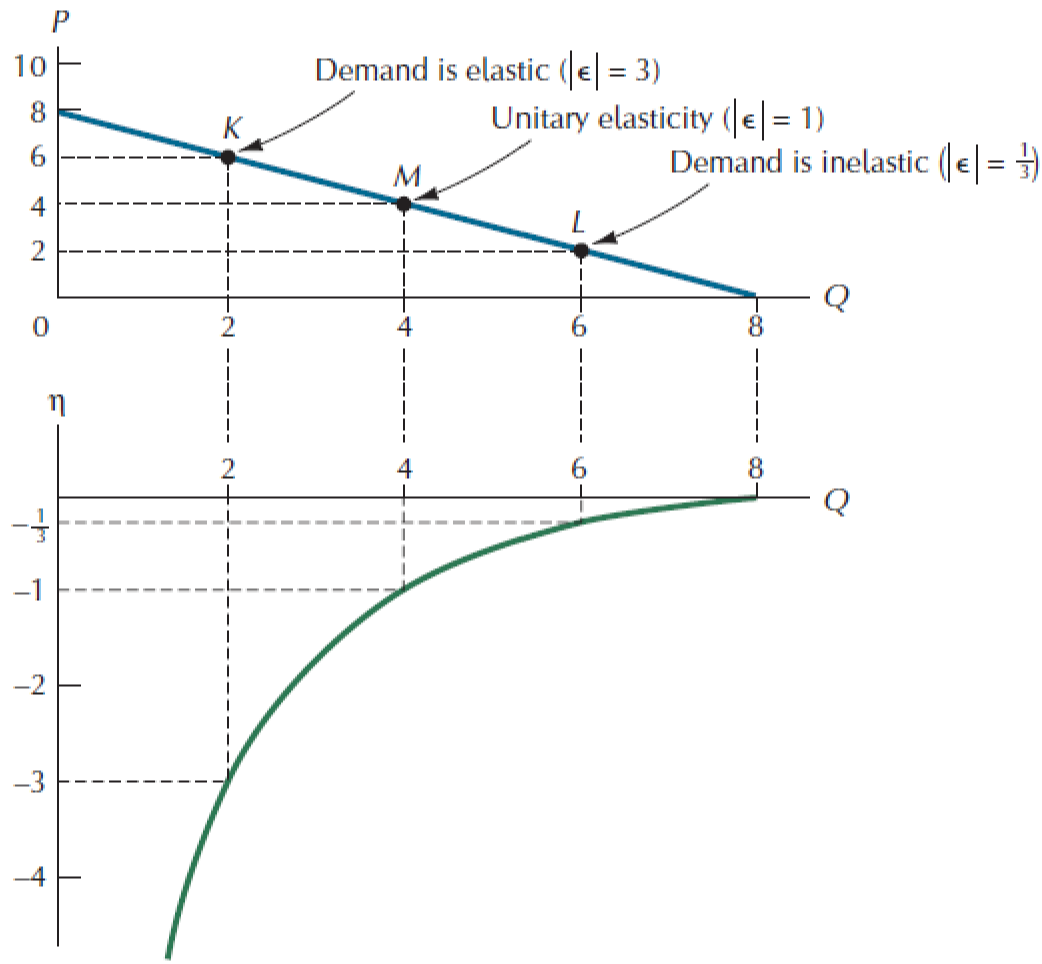


Figure A4.3: Elasticity at Different Positions Along a Straight-Line Demand Curve



Income-Compensated Demand Curve

- ***Income-compensated demand curve***: a demand curve that tells how much consumers would buy at each price if they were fully compensated for the income effects of price changes.

Figure A4.4: Ordinary vs. Income-Compensated Demand Curves for a Normal Good

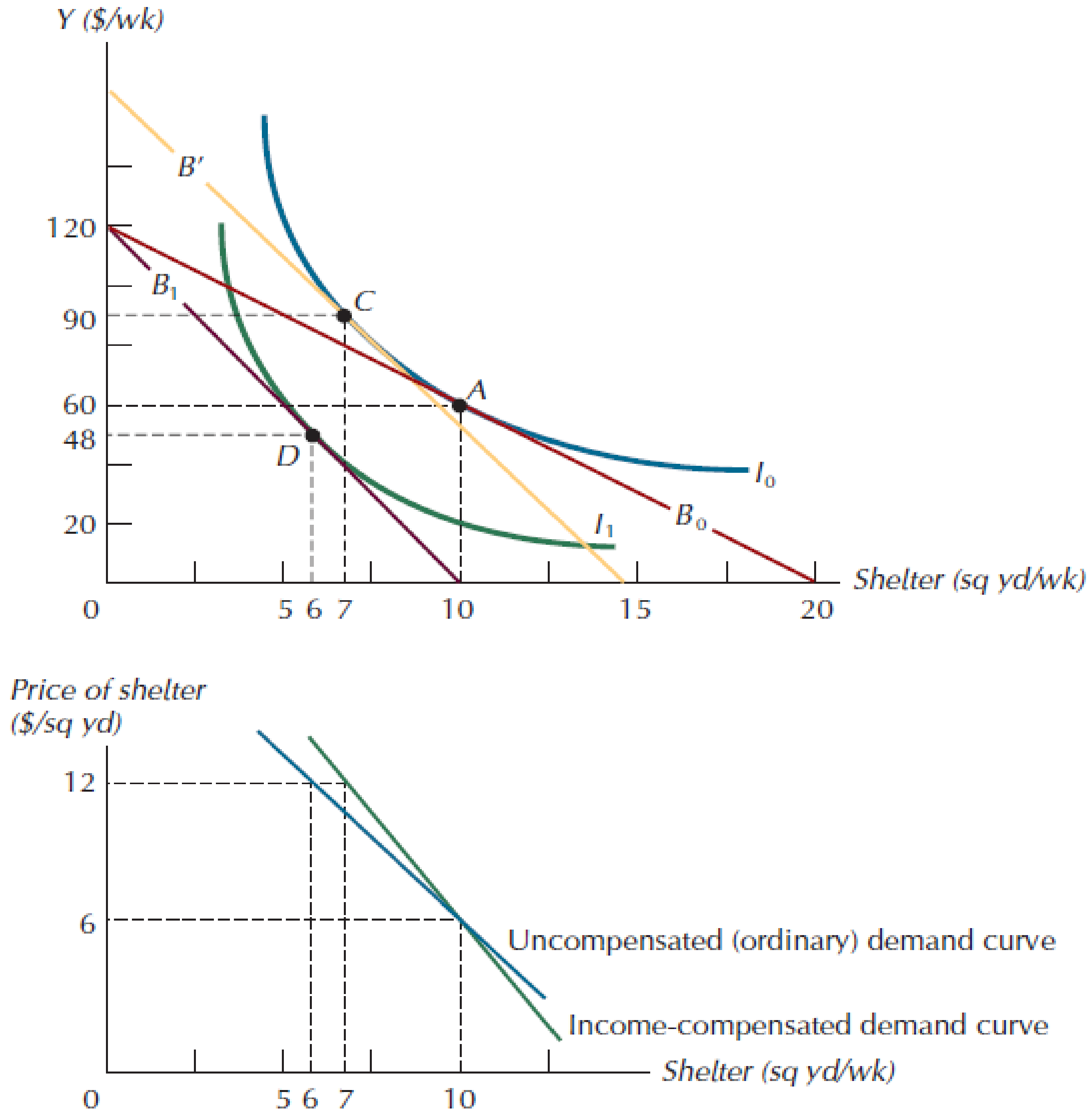


Figure A4.5: Ordinary vs. Income-Compensated Demand Curves for an Inferior Good