

Problems

Your local telephone company has offered you a choice between the following billing plans:

Plan A: Pay \$0.05 per call.

Plan B: Pay an initial \$2/wk, which allows you up to 30 calls per week at no charge.

Any calls over 30/wk cost \$0.05 per call.

If your income is \$12/wk and the composite good costs \$1, graph your budget constraints for the composite good and calls under the two plans.

Howard said that he was exactly indifferent between consuming four slices of pizza and one beer versus consuming three slices of pizza and two beers. He also said that he prefers a bundle consisting of one slice of pizza and three beers to either of the first two bundles. Do Howard's preferences exhibit diminishing marginal rates of substitution?

Paula, a former actress, spends all her income attending plays and movies and likes plays exactly three times as much as she likes movies.

- Draw her indifference map.
- Paula earns \$120/wk. If play tickets cost \$12 each and movie tickets cost \$4 each, show her budget line and highest attainable indifference curve. How many plays will she see?
- If play tickets are \$12, movie tickets \$5, how many plays will she attend?

Mattingly is a caffeinated-cola drinker who spends his entire soft drink budget on Coca-Cola and Jolt cola and cares only about total caffeine content. If Jolt has twice the caffeine of Coke, and if Jolt costs \$1/pint and Coke costs \$0.75/pint, how will Mattingly spend his soft drink budget of \$15/wk?

Mary has a weekly allowance of \$10, all of which she spends on newspapers (N) and magazines (M), whose respective prices are \$1 and \$2. Her utility from these purchases is given by $U(N) + V(M)$. If the values of $U(N)$ and $V(M)$ are as shown in the table, is Mary a utility maximizer if she buys 4 magazines and 2 newspapers each week? If not, how should she reallocate her allowance?

| N | $U(N)$ | M | $V(M)$ |
|-----|--------|-----|--------|
| 0 | 0 | 0 | 0 |
| 1 | 12 | 1 | 20 |
| 2 | 20 | 2 | 32 |
| 3 | 26 | 3 | 40 |
| 4 | 30 | 4 | 44 |
| 5 | 32 | 5 | 46 |

| N | $U(N)$ | $MU(N)$ | $MU(N)/PN$ | M | $U(M)$ | $MU(M)$ | $MU(M)/PM$ |
|-----|--------|---------|------------|-----|--------|---------|------------|
| 0 | 0 | | | 0 | 0 | | |
| | | 12 | 12 | | | 20 | 10 |
| 1 | 12 | | | 1 | 20 | | |
| | | 8 | 8 | | | 12 | 6 |
| 2 | 20 | | | 2 | 32 | | |
| | | 6 | 6 | | | 8 | 4 |
| 3 | 26 | | | 3 | 40 | | |
| | | 4 | 4 | | | 4 | 2 |
| 4 | 30 | | | 4 | 44 | | |
| | | 2 | 2 | | | 2 | 1 |
| 5 | 32 | | | 5 | 46 | | |

Suppose a market has 10 consumers, each with demand curve $P = 10 - 5Q_i$, where P is the price in dollars per unit and Q_i is the number of units demanded per week by the i th consumer (Figure 4.18). Find the market demand curve.

The monthly market demand curve for calculators among engineering students is given by $P = 100 - Q$, where P is the price per calculator in dollars and Q is the number of calculators purchased per month. If the price is \$30, how much revenue will calculator makers get each month? Find the price elasticity of demand for calculators. What should calculator makers do to increase revenue?

Smith cannot tell the difference between rice and wheat and spends all her food budget of \$24/wk on these foodstuffs. If rice costs \$3/lb, draw Smith's price-consumption curve for wheat and the corresponding demand curve.

Rank the absolute values of the price elasticities of demand at the points A , B , C , D , and E on the following three demand curves.

