## Section 1.2, 1.3

## Linear Functions, Rates of Change

- 1. Sales of music compact disks (CDs) increased rapidly throughout the 1990s. Sales were 333.3 million in 1991 and 938.2 million in 1999.
  - a. Find a formula for sales, S, of music CDs, in millions of units, as a linear function of the number of years, t, since 1991.
  - b. Give units for and interpret the slope and the vertical intercept of this function.
  - c. Use the formula to predict music CD sales in 2005.
- 2. When a new product is advertised, more and more people try it. However, the rate at which new people try it slows as time goes on.
  - a. Graph the total number of people who have tried such a product against time.

- b. What do you know about the concavity of the graph?
- 3. When a retailer increases the selling price of an item from 75 cents to 80 cents, his weekly profit in sales of that item changes 300 cents. With these changes, the average rate of change of profit with respect to selling price is 60. Interpret the average rate of change of profit with respect to selling price.