

43. **BASEBALL** The Pythagorean Theorem of Baseball is a formula for approximating a team's ratio of wins to games played. Let R be the number of runs the team scores during the season, A be the number of runs allowed to opponents, W be the number of wins, and T be the total number of games played. Then the formula below approximates the team's ratio of wins to games played. (p. 26)

$$\frac{W}{T} = \frac{R^2}{R^2 + A^2}$$

- a. Solve the formula for W .
- b. In 2004 the Boston Red Sox scored 949 runs and allowed 768 runs. How many of its 162 games would you estimate the team won? *Compare* your answer to the team's actual number of wins, which was 98.
44. **HIGHWAY DRIVING** A sport utility vehicle has a 21 gallon gas tank. On a long highway trip, gas is used at a rate of approximately 4 gallons per hour. Assume the gas tank is full at the start of the trip. (p. 72)
- a. Write a function giving the number of gallons g of gasoline in the tank after traveling for t hours.
- b. Graph the function from part (a).
- c. Identify the domain and range of the function from part (a).
45. **COMMISSION** A real estate agent's commission c varies directly with the selling price p of a house. An agent made \$3900 in commission after selling a \$78,000 house. Write an equation that gives c as a function of p . Predict the agent's commission if the selling price of a house is \$125,000. (p. 107)
46. **WASTE RECOVERY** The table shows the amount of material (in millions of tons) recovered from solid waste in the United States from 1994 to 2001. Make a scatter plot of the data and approximate the best-fitting line. Predict the amount of material that will be recovered from solid waste in 2010. (p. 113)

Years since 1994, t	0	1	2	3	4	5	6	7
Recovered material, m	50.6	54.9	57.3	59.4	61.1	64.8	67.7	68.0

47. **WEIGHTLIFTING RECORDS** The men's world weightlifting records for the 105-kg-and-over weight category are shown in the table. The combined lift is the sum of the snatch lift and the clean and jerk lift. Let s be the weight lifted in the snatch and let j be the weight lifted in the clean and jerk. Write and graph a system of inequalities to describe the weights an athlete could lift to break the records for both the snatch and combined lifts, but *not* the clean and jerk lift. (p. 168)

Men's 105+ kg World Weightlifting Records		
Snatch	Clean and Jerk	Combined
213.0	263.0	472.5