

Algebra 2

Data Updates

Chapter 2

Lesson 2.4, page 93, Example 5, Politics

In 1970 there were 160 African-American women in elected public office in the United States. By 1999 the number had increased to 2997. Write a linear model for the number of African-American women who held elected public office at any given time between 1970 and 1999. Then use the model to predict the number of African-American women who will hold public office in 2010.

Answer:

$$y = 160 + 97.8t$$

In 2010, which is 40 years since 1970, you can predict that there will be

$$y = 160 + 97.8(40) \approx 4072 \text{ African-American women in elected public office.}$$

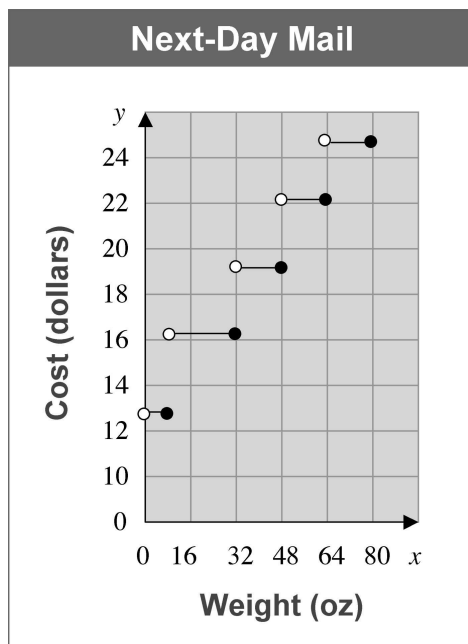
Lesson 2.7, page 119, Exercises 50 and 51, Postal Rates

As of July 1, 2001, the cost C (in dollars) of sending next-day mail using the United States Postal Service, depending on the weight x (in ounces) of a package up to five pounds, is given by the function below.

$$C(x) = \begin{cases} 12.45, & \text{if } 0 < x \leq 8 \\ 16.25, & \text{if } 8 < x \leq 32 \\ 19.25, & \text{if } 32 < x \leq 48 \\ 22.05, & \text{if } 48 < x \leq 64 \\ 24.85, & \text{if } 64 < x \leq 80 \end{cases}$$

Answers:

50.



51. domain: $0 < x \leq 80$; range: 12.45, 16.25, 19.15, 22.05, 24.85

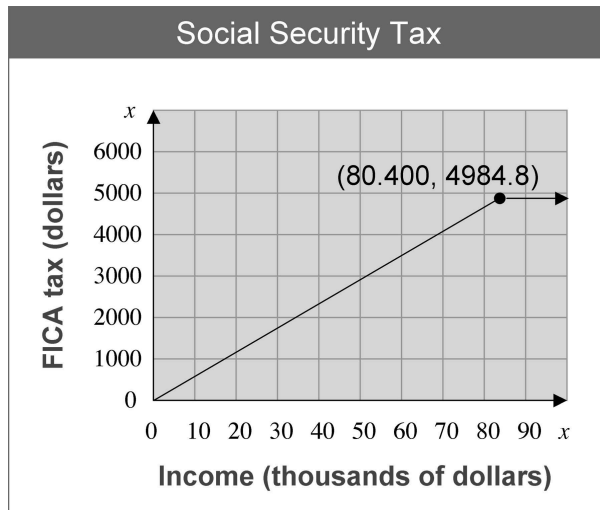
Lesson 2.7, page 119, Exercises 56 and 57, Social Security

The amount of Social Security you pay, part of your Federal Insurance Contributions Act (FICA) deductions, depends on your annual income. As of 2001 you pay 6.2% of your income if it is less than \$80,400. If your income is at least \$80,400, you pay a fixed amount of \$4984.80.

Answers:

56.

$$f(x) = \begin{cases} 0.062x, & \text{if } x < 80,400 \\ 4984.80, & \text{if } x \geq 80,400 \end{cases}$$



57. \$1860