

83. **Make a Decision** The table shows the number  $y$  (in millions) of U.S. households with color televisions from 1985 to 2004. (*Data Source: Nielsen Media Research*)

Year	Number, $y$
1985	77.7
1986	80.1
1987	82.7
1988	85.0
1989	87.3
1990	90.1
1991	91.3
1992	90.8
1993	91.5
1994	93.3
1995	94.4
1996	95.2
1997	96.5
1998	97.5
1999	99.1
2000	100.6
2001	102.0
2002	105.4
2003	106.6
2004	108.3

- Use a graphing utility to plot the data. Let  $t$  represent the year, with  $t = 5$  corresponding to 1985.
- Use the technique demonstrated in Exercises 57–62 in Section 6.2 to create a system of linear equations for the data. Let  $t$  represent the year, with  $t = 5$  corresponding to 1985.
- Use the matrix capabilities of a graphing utility to find an inverse matrix to solve the system from part (b), and find the least squares regression line  $y = at + b$ .
- Use a graphing utility to graph the model from part (c) and the original data in the same viewing window. How well does the model fit the data? Explain your reasoning.
- Use the result of part (c) to determine in which year the number of households with color televisions will be 120,000,000.
- Use the result of part (c) to estimate the number of households with color televisions in 2005.
- The actual number of households with color televisions in 2005 was 109.5. How does this value compare with your estimate from part (e)?