

Section 5.1 (cont.)

4) The table gives the approximate rate of change of the number of employees of the Coca-Cola Company from 1987 through 1996. (Source: Based on data in *Hoover's Online Guide*)

Year	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Rate-of-change (thousand employees per year)	0.001	1.916	3.148	3.696	3.560	2.740	1.236	-0.952	-3.824	-7.380

- a) Find a model for the rate-of-change data.
 b) Use the equation and ten left rectangles to estimate the change in the number of Coke employees from the beginning of 1987 through the end of 1991
- 5) The rate of change of per capita consumption of a certain type of cheese in the United States from 1982 through 2002 can be modeled as $C(x) = -0.0011x^2 + 0.02x + 0.2399$ pounds per person per year where x is the number of years since 1970.
- a) Graph C between 1982 and 2002.
 b) According to the graph of C , when was the per capita consumption of this cheese growing and when was it declining?
 c) Find the point on the graph of C that corresponds to the time when the per capita consumption of this cheese was greatest.
 d) Estimate using 10 right rectangles the area lying above the x -axis and below the graph of C over the interval in part a. Interpret your answer.
 e) Estimate using 10 right rectangles the area lying below the x -axis and above the graph of C over the interval in part a. Interpret your answer.
 f) By how much did the per capita consumption of this cheese change between 1982 and 2002?
 g) What information do we need to determine the per capita consumption of this cheese in 2002?
- 6) The rate of change of Microsoft's revenue is $R(t)$ million dollars per year where t is the number of years since 1990. What are the units on:
 a) the area of the region between the graph of R and the t -axis from $t = 5$ to $t = 7.5$?
 b) $\int_0^9 R(t) dt$?
 c) the amount by which Microsoft's revenue changed from 1992 to 2002?
- 7) FIU's electricity usage is growing by $E(x)$ kilowatt-hours per day where x is the number of days since the beginning of the year. Interpret the following in context:
 a) The area of the region between the graph of E and the x -axis from $x = 0$ to $x = 30$.
 b)

$$\int_{30}^{60} E(x) dx$$