

EXAMPLE 3
on p. 943
for Exs. 26–27

26. **BICYCLISTS** The table below shows the number of adult residents R (in millions) in the United States who rode a bicycle during the months of October 2001 through September 2002. The time t is measured in months, with $t = 1$ representing October 2001. Use a graphing calculator to write a sinusoidal model that gives R as a function of t .

t	1	2	3	4	5	6	7	8	9	10	11	12
R	35	30	24	24	26	29	35	34	39	43	44	37

27. **MULTI-STEP PROBLEM** The table below shows the number of employees N (in thousands) at a sporting goods company each year for eleven years. The time t is measured in years, with $t = 1$ representing the first year.

t	1	2	3	4	5	6	7	8	9	10	11
N	20.8	22.7	24.6	23.2	20	17.5	16.7	17.8	21	22	24.1

- a. **Model** Use a graphing calculator to write a sinusoidal model that gives N as a function of t .
- b. **Calculate** Predict the number of employees in the twelfth year.
28. **TAKS REASONING** The low tide at Eastport, Maine, is 3.5 feet and occurs at midnight. After 6 hours, Eastport is at high tide, which is 16.5 feet.



- a. **Model** Write a sinusoidal model that gives the tide depth d (in feet) as a function of the time t (in hours). Let $t = 0$ represent midnight.
- b. **Calculate** Find all the times when low and high tides occur in a 24 hour period.
- c. **Reasoning** Explain how the graph of the function you wrote in part (a) is related to a graph that shows the tide depth d at Eastport t hours after 3:00 A.M.
29. **CHALLENGE** The table below shows the average monthly sea temperatures T (in degrees Celsius) for Santa Barbara, California. The time t is measured in months, with $t = 1$ representing January.

t	1	2	3	4	5	6	7	8	9	10	11	12
T	14	13.6	13.4	12.5	13.9	15.6	16.8	17.2	17.7	17.1	15.5	14.1

- a. Use a graphing calculator to write a sine model that gives T as a function of t .
- b. Find a cosine model for the data.