

**Project: Meteorology** The table shows the mean monthly temperature  $T$  (in degrees Fahrenheit) and the mean monthly precipitation  $P$  (in inches) for Honolulu, Hawaii, where  $t$  is the month, with  $t = 1$  corresponding to January. (Source: National Climatic Data Center)

Month, $t$	$T$	$P$
1	73.0	2.73
2	73.0	2.35
3	74.3	1.89
4	75.6	1.11
5	77.2	0.78
6	79.5	0.43
7	80.8	0.50
8	81.8	0.46
9	81.5	0.74
10	80.2	2.18
11	77.7	2.27
12	74.8	2.85

- (a) Use a graphing utility to plot both sets of data in separate viewing windows.
- (b) Does each set of data appear to fit a sine curve? Explain.
- (c) Use the *regression* feature of the graphing utility to find a sine model for each set of data.
- (d) Use the graphing utility to graph each model from part (c) with the original data. How well does each model fit the original data?
- (e) What is the period of each model? Are the periods what you expected? Explain.
- (f) What is the amplitude of each model? Interpret the meaning of the amplitude of each model in the context of the problem.
- (g) At what values of  $t$  does each sine model reach its maximum and minimum? What do these values represent in the context of the problem?