Meteorology The table shows the mean monthly high temperature T (in degrees Fahrenheit) and mean monthly precipitation P (in inches) for Cheyenne, Wyoming where t is the month, with $t = 1$ corresponding to January. (Data Source: NOAA)

DATA

Spreadsheet at LarsonPrecalculus.com

Month, t	T	P
1	39.5	0.33
2	40.5	0.47
3	47.5	1.05
4	54.9	1.78
5	64.7	2.34
6	75.3	2.34
7	83.4	2.19
8	81.2	1.95
9	71.8	1.48
10	58.8	0.93
11	46.5	0.59
12	38.2	0.49

(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 your reasoning.

(c) Use the *sine regression* feature of a graphing utility to find sine models to fit each set of data.

(d) Use a graphing utility to graph each model from part (c) with the corresponding 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 your reasoning.

(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?