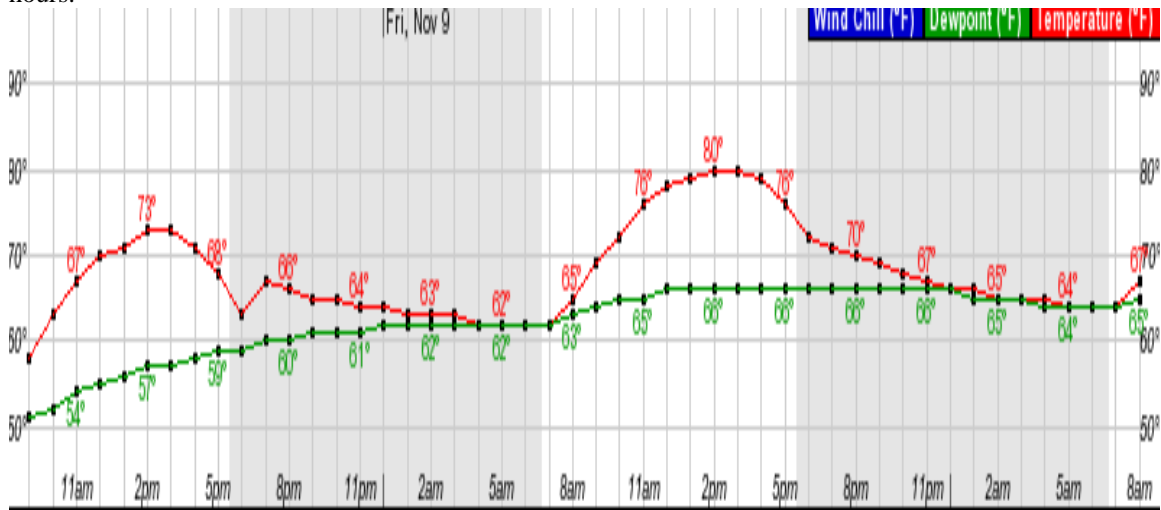


Below is a plot Houston daily temperature over a year period; the top curve shows the daily high and the bottom curve shows the daily low.



On each day, the temperature varies between the high and low, below is an example of hourly temperature plot over 48 hours.



Write a simple approximate mathematical model for the hourly temperature for a whole year period, using simple sine or cosine function. If you collect hourly data for 50 years, assuming no global warming over the period, and that the annual temperature pattern remains the same as the top plot, what would the power spectral density of the data look like? (Sketch it).