Trigonometric Models

The data below was collected on the east coast of Canada on August 15 and relates the height, h, of a tide to the time of day, t.

a) Graph this data using time as the X-axis and height as the Y-axis. You may need to use a 24 hour day for the time. In other words, 2 p.m. should be represented as 14 hrs. [3]

time	h (m)
4 am	0.7
5 am	1.2
6 am	2.4
7 am	4.1
8 am	5.8
9 am	7.1
10 am	7.6
11 am	7.2
12 (noon)	6.1
1 pm	4.5
2 pm	2.9
3 pm	1.6
4 pm	0.8
5 pm	1.1
6 pm	2.1
7 pm	3.7
8 pm	5.4

b) How high is high tide and how low is low tide? [2]

c) Determine the amplitude and period for this periodic function. [2]

d) Determine an equation for a sine function that approximates the data. Justify all values of components of your equation. [4]

e) Determine the height of the tide at 2 am on August 15, 11 pm on August 15 and 3 am on August 16. [3]