Calculating the Ebb and Flow of Tides for Maui

February 12th, 2016, high tide occurred at 7:02 pm. At that time the water was 1.5 meters deep. Low tide occurred at 12:36 p.m, at which time the water was only .2 meters deep. Assume that the depth of the water is a sinusoidal function of time with a period of half a lunar day (about 12 hrs 24 min)

a) Model the depth, D, as a sinusoidal function of time, t, algebraically then graph the function.

b) At what time did the first low tide occur?

c) What was the approximate depth of the water at 6:00 am and at 3:00 pm?

d) What was the first time on this day when the water was 1 meter deep?