Tide Problem. Mrs. Robinson is on the beach on her birthday October 31st. At 2:00 pm, high tide, she finds that the depth of the water at the end of the jetty is 0.5 meters. At 7:30 pm, low tide, the depth of the water is 0.1 meters. Assume that the depth varies sinusoidally with time.

(a) Write an equation expressing depth as a function of the time that has elapsed since 12:00 midnight at the beginning of October 31st.

(b) Predict the depth of the water at 3:00 am on October 31st.

(c) At what time does the first high tide occur on October 31st.

(d) Mrs. Robinson likes walking at low tide. What is the first time after noon that she can walk at low tide?

(e) What is the first time on October 31st that the water depth will be 0.3 meters?