

**Tide Problem.** Mrs. Fuston is on the beach in Ft. Pierce, Florida, on her birthday August 26<sup>th</sup>. 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.

Using the graph below, answer the following questions:

- Write an equation expressing depth as a function of the time that has elapsed since 12:00 midnight at the beginning of August 26<sup>th</sup>.
- Predict the depth of the water at 3:00 pm on August 26<sup>th</sup>.
- At what time does the first high tide occur on August 26<sup>th</sup>.
- Mrs. Fuston likes walking at low tide. What is the first time after noon that she can walk at low tide?
- What is the first time on August 26<sup>th</sup> that the water depth will be 0.3 meters?

