

Warm-up

Name \_\_\_\_\_

**Tide Problem.** Mrs. Robinson is on the beach on her birthday October 31<sup>st</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:

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

$$y = .2 \cos \frac{2\pi}{12} (x-3) + .3$$

(b) Predict the depth of the water at 3:00 pm on October 31<sup>st</sup>.

.5m

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

3:00am

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

7:30pm

(d) What is the first time on October 31<sup>st</sup> that the water depth will be 0.3 meters?

12:15am



