

Modeling Example - 6/1/15

Local tides are measured by the depth of the water (in feet) at the end of a pier in West Seattle. Given that measurement of water depths begins at midnight each day and t represents the hours elapsed since midnight,

tides can be modeled by $h(t) = 4 \cos\left(\frac{\pi}{6}(t-1)\right) + 6$

$a \rightarrow$
 $b = \frac{\pi}{\omega} \rightarrow \frac{2\pi}{\pi/\omega} = 2\pi \cdot \frac{\omega}{\pi} = 12$
 $\frac{12}{4} = 3$

- a. Identify the period, phase shift, ~~axis~~, and amplitude of the function. Then sketch a complete graph.
- b. What is the maximum depth of the water? 10ft
- c. What is the minimum depth of the water? 2ft
- d. When does the first high tide of the day occur? 1AM
- e. When does the first low tide of the day occur? 7AM
- f. After the first high tide occurs, how many hours elapse before the next high tide occurs? 12hrs

