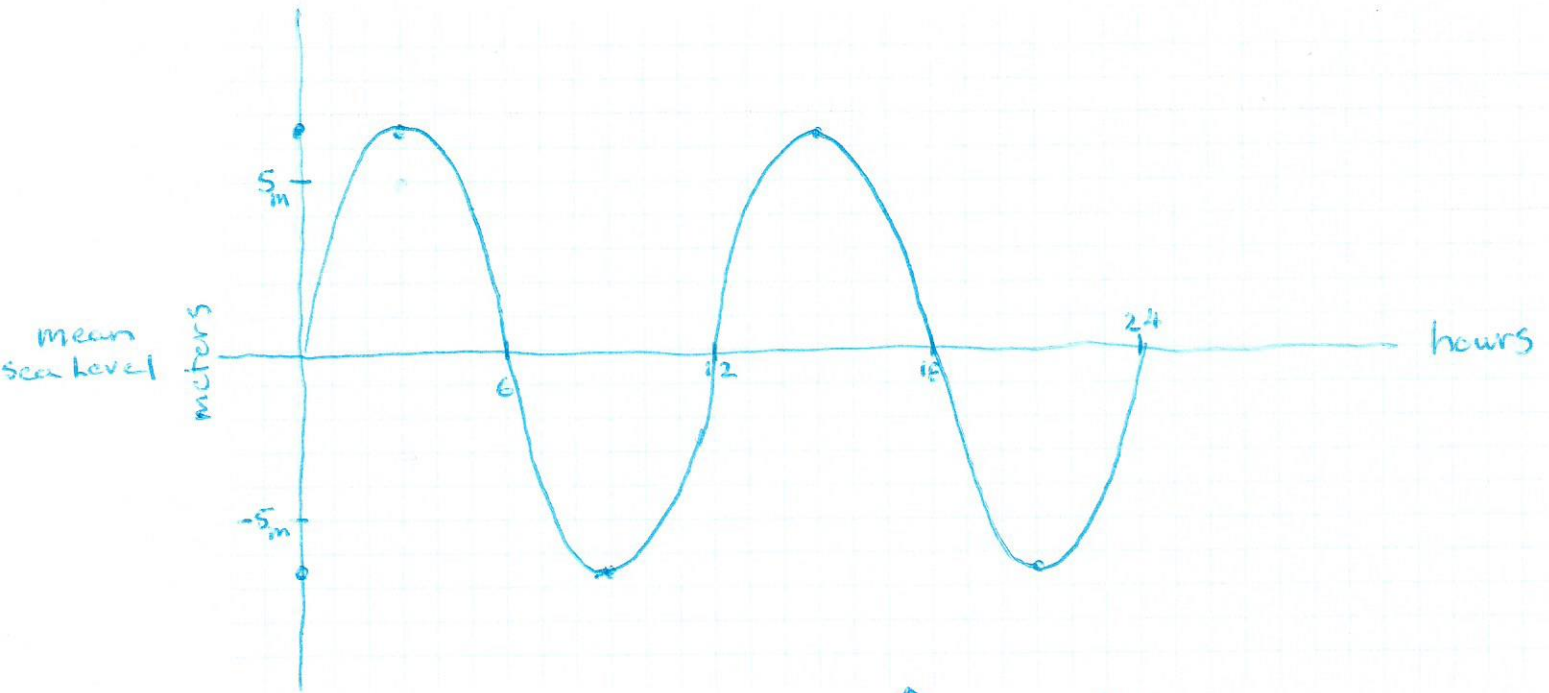


7. (16 points) The alternating half-daily cycles of the rise and fall of the ocean are called tides. Tides in one section of the Bay of Fundy (Canada!!) cause the water level to rise 6.5m above mean sea level and drop 6.5m below. The tide completes one cycle every 12 hours. Assuming the height of water with respect to mean sea level is modeled by a sine function;

- (8pts) a) Sketch a graph that models the position of the water in reference to mean sea level for one complete day. (be sure and label your axes)



↑
sorry, long hour (Charlwick's class) during

- (6pts) b) Find an equation for this model.

$$y \text{ or } h = 6.5 \sin \frac{\pi}{6} t$$

(t, h)
or
(x, y)

↑ 2pts ↑ 1pt ← 3pts →

per = 12 = $\frac{2\pi}{k}$
 $k = \frac{2\pi}{12} = \frac{\pi}{6}$

- (2pts) c) What is the maximum displacement between low tide and high tide?

$$\begin{array}{c} 6.5 \\ | \\ \hline | \\ -6.5 \end{array} = 13m$$