

Solutions \rightarrow Writing Trig. Equations.

$$3. \quad a) \quad \text{period} = \frac{6}{5} \quad \frac{6}{5} = \frac{2\pi}{k}$$
$$6t = 10\pi t$$
$$t = \frac{5}{3}\pi$$

equation: $b = -20 \cos\left(\frac{5}{3}\pi t\right) + 100.$

b) 80-120 c) 1 beat per $\frac{6}{5}$ s

$$\frac{1 \text{ beat}}{\frac{6}{5} \text{ s}} = \frac{5}{6} \frac{\text{beats}}{\text{s}} = 50 \text{ beats per min.}$$

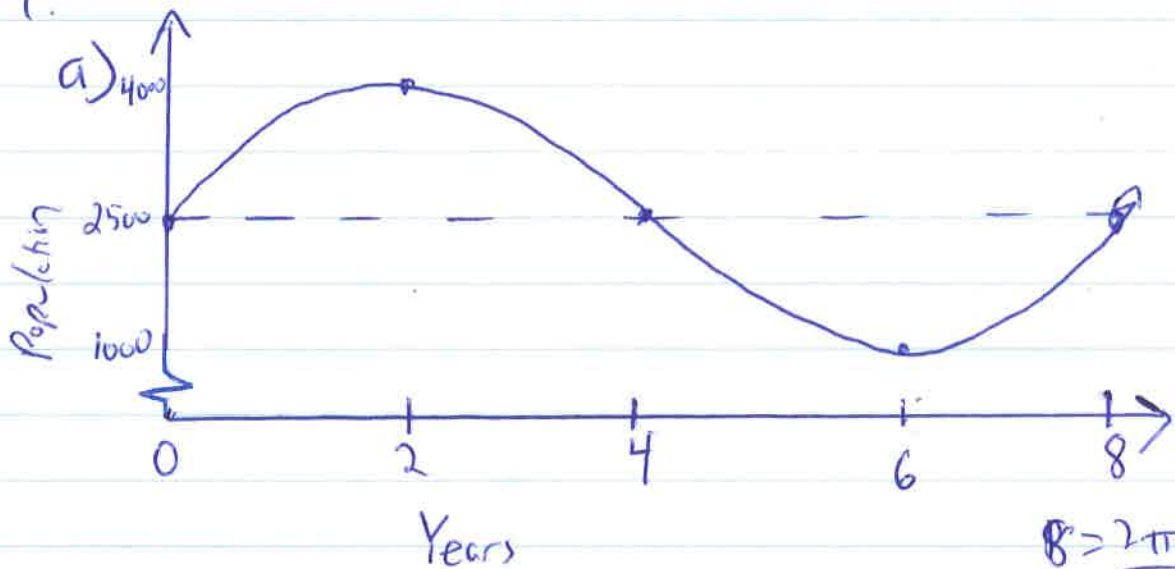
d) period = $\frac{6}{5}$

key points every $\frac{6}{5} \div 4$

$$= \frac{6}{5} \times \frac{1}{4} = \frac{3}{15} \text{ s.}$$

$$b = 20 \sin\left[\frac{5}{3}\pi\left(t - \frac{3}{15}\right)\right] + 100.$$

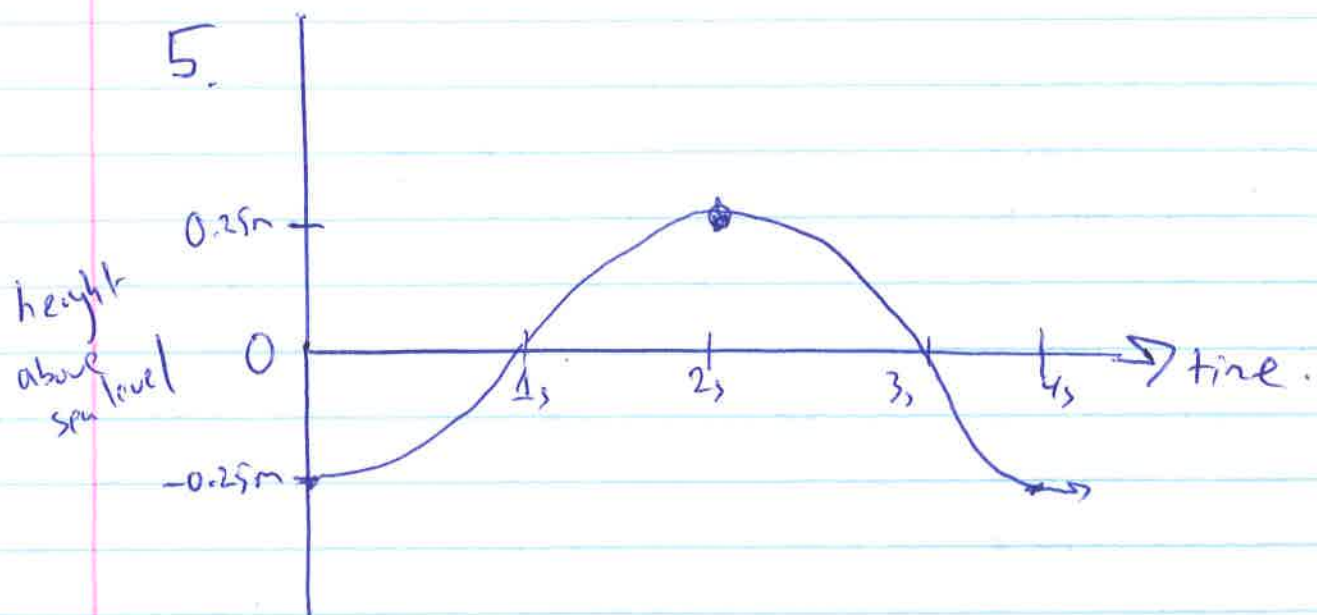
4.



b) $P(t) = 1500 \sin\left[\frac{\pi}{4}t\right] + 2500$

c)
$$\begin{aligned} P(38) &= 1500 \sin\left[\frac{\pi}{4}(38)\right] + 2500 \\ &= 1500 \sin\left(\frac{19\pi}{2}\right) + 2500 \\ &= 1500(-1) + 2500 \\ &= 1000 \end{aligned}$$

d) $P(t) = 1500 \sin\left(\frac{2\pi}{5}t\right) + 2500$ $\left. \begin{array}{l} 5 = \frac{2\pi}{k} \\ 5k = 2\pi \\ \therefore k = \frac{2}{5}\pi \end{array} \right\}$



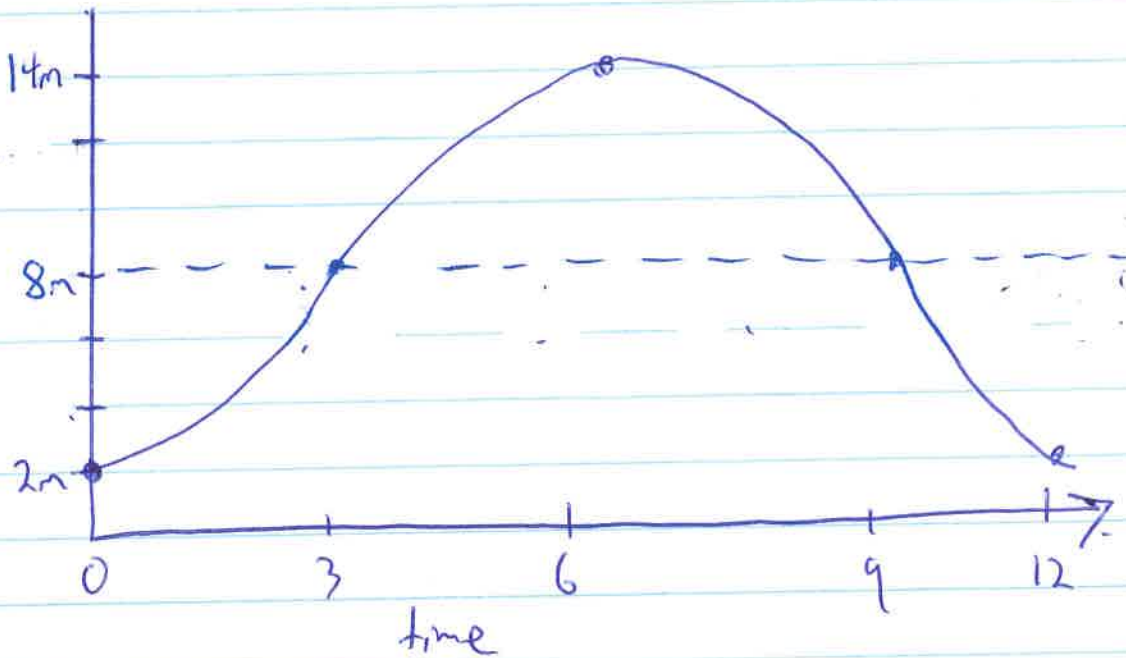
a)

b) $4 = \frac{2\pi}{T_c}$ $h(t) = -0.25 \cos\left(\frac{\pi}{2}t\right)$
 $4k = 2\pi$
 $k = \frac{\pi}{2}$

c) horizontal stretch factor 60. $\text{per} = \frac{2\pi}{T_c}$
 $h(t) = -0.25 \cos\left(\frac{\pi}{30}t\right)$ $60 = \frac{2\pi}{T_c}$
 $k = \frac{\pi}{30}$

6.

Water Level



$$b) d(t) = -6 \cos\left(\frac{\pi}{6}t\right) + 8$$

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

$$k = \frac{\pi}{6}$$

c) 6 hours, 18 hours
6:00 AM and 6:00 PM.