BOARD OF STUDIES
NEW SOUTH WALES

$Q_0 = 6$ ml.

when $t = 15$

$Q = Q_0 e^{-kt}$

$3 = 6 e^{-k15}$

$\frac{3}{6} = e^{-15k}$

$\ln \frac{1}{2} = -15k$

$k = \frac{\ln \frac{1}{2}}{-15}$

$= 0.046$

(ii) $\frac{1}{8} = 6 e^{-0.046t}$

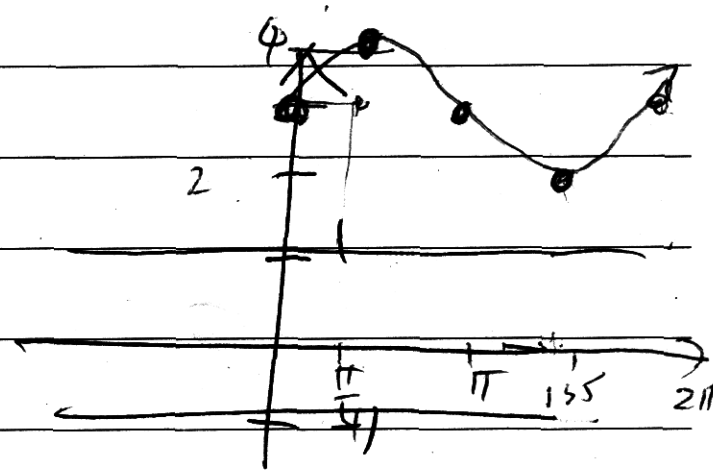
$\frac{1}{48} = e^{-0.046t}$

$t = \frac{\ln \frac{1}{48}}{-0.046}$ $t = 84$ secs

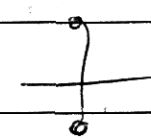
b) $x = \sin 2t + 3$

$P = \frac{2\pi}{B}$

$P = \pi$




$x = \frac{\cos 2x}{2}$



$x = 0 \rightarrow \frac{\cos 2x}{2} = 0$

$x = \frac{\pi}{2}$ $\frac{2\pi}{135}$

(iii) $y = 2$

going to the right