Question 8

a) $Q = Q_0 e^{-kt}$

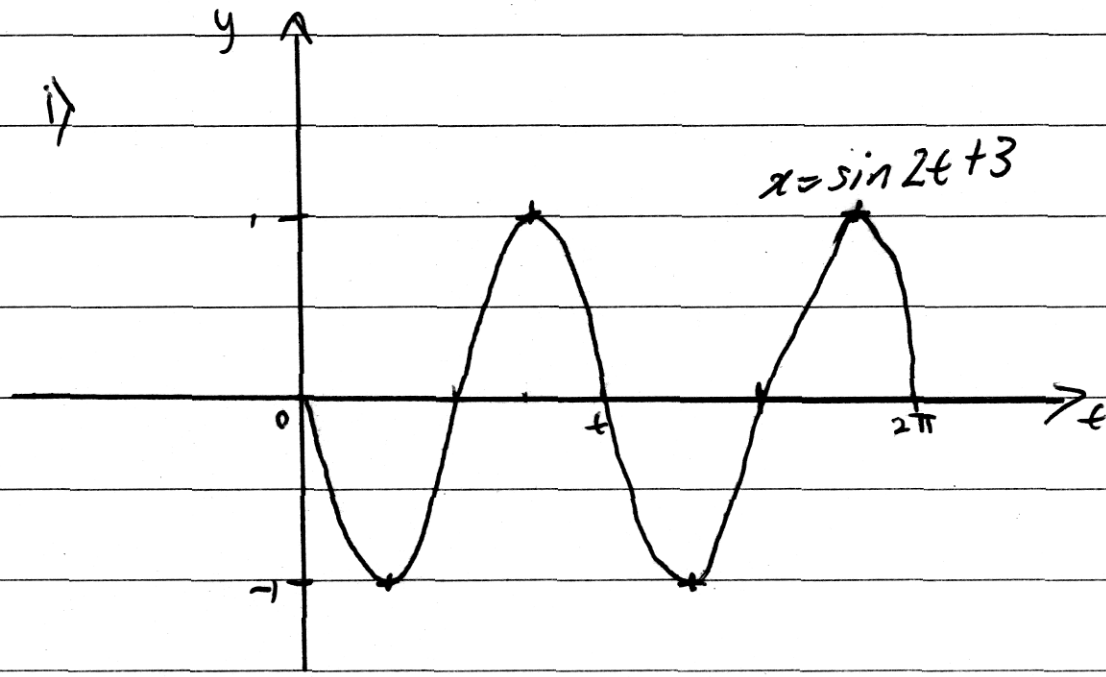
$3 = Q_0 e^{-k(15)}$

$3 = Q_0 e^{-15k}$

BOARD OF STUDIES
NEW SOUTH WALES

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

i)



ii) $(\pi/4, -1)\ (3\pi/4, 1)\ (5\pi/4, -1)\ (7\pi/4, 1)$

iii) The motion is of a wave with Amplitude of 1 and wavelength of π. It is the sine wave/graph out of phase by $\pi/2$.