Question 8

a $N = N_0 e^{kt}$

$4982 = N_0 e^{k(70)}$

$\frac{4982}{N_0} = e^{k(70)}$

$4982 = e^{70k}$

$\ln 4982 = 70k$

$k = \frac{4982}{70}$

$k \doteq 71$

Number of Koalas in November 2001

$\therefore = N_0 e^{71(78)}$.

$= N_0 e^{5538}$

$=$

b P (A is drawn first)

$= \frac{1}{5}$

P (order of names is A, B, C, D, E)

$= \frac{1}{25}$

C

i) y_1 at which $\frac{dy}{dt}$ is a maximum

y_1 at a maximum is ~~10cm~~ 7.5 cm

y_2 at a minimum is ~~0cm~~ 2cm

ii)