Start here for
Question Number: **8**

a) $\dfrac{dp}{dt} = kP.$

~~P~~ = Ae^{kt}

~~200~~ = $105 e^{k75.}$ = 200 000 000.

$\Rightarrow k75 = \ln \dfrac{200\,000\,000}{105}$

$k = 0.162097 \cdots$

$105 e^{0.162097 \times 100.}$ = pop in 2035.

= 1150739165 cane toads

in 2035.

b) ~~both showing heads = 0.36.~~ ~~2pt~~

~~1 showing heads = ~~

~~2 tails~~

$\dfrac{PH}{4T} \; 0.86.$
$\dfrac{4T}{TT}$

$\dfrac{7H}{}$ 2

b) 2 heads = 0.36

other possibilities = 0.64.

$H \Big\langle \begin{array}{l} H \; -0.36. \\ T \; 0.6. \end{array}$

$T \Big\langle \begin{array}{l} H \\ T \end{array}$
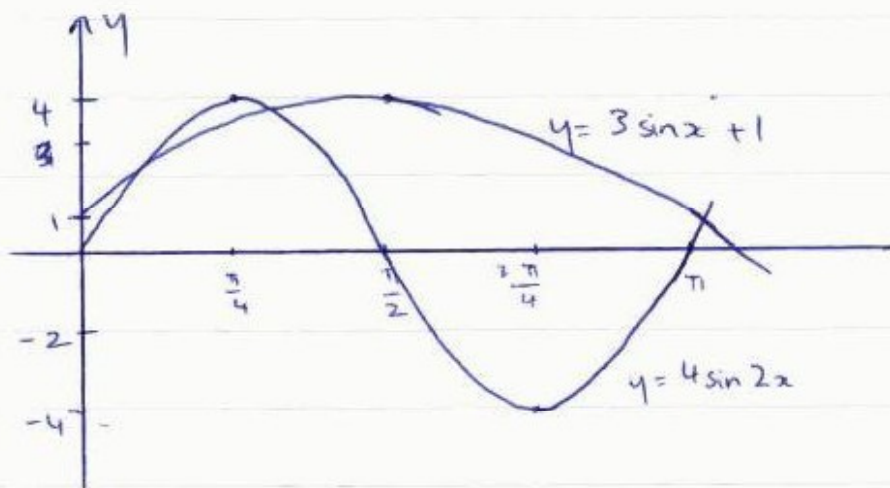
1 heads = $\sqrt{0.36}$

= 0.6.

so 2 tails = 0.04.

c) i) 4

ii) $\dfrac{2\pi}{b} = \pi$

$= 2.$

iii)

d) $f'(x) = 3x^2 - 6x + k$

increasing where $f'(x) > 0$

$3x^2 - 6x + k > 0$

$3x^2 - 6x > -k$

$3x(x - 2) > -k$

$0, 2 > -k$

$k > -2, 0.$

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