

## Question 7

a) i) because it keeps on going for example

$$(\sqrt{5}-2)^2 + \dots + (\sqrt{5}-2)^{48} + \dots + (\sqrt{5}-2)^{102}$$

$$\text{ii) } D_{\infty} = \frac{a}{1-r}$$

$$= \frac{1}{1-0.2}$$

$$= \frac{1}{0.8}$$

$$= 1.25$$

$$D_{\infty} = 1.25$$

$$\frac{(1-x)(1-x)}{1-x+x+x^2}$$

b)  $V = 25 \left(1 - \frac{x}{60}\right)^2$

i)  $V = 25 \left(1 - \frac{0}{60}\right)^2$

$$= 25(1-0)^2$$

$$= 25(59)^2$$

$$= 25 \times 3481$$

$$= 87025 \text{ litres}$$

ii)  $21756\frac{1}{4} = 25 \left(1 - \frac{x}{60}\right)^2$

$$21756\frac{1}{4} = 1500(1-x)^2$$

$$\frac{3481}{240} = (1-x)^2$$

$$\frac{3481}{240} = 1+x^2$$

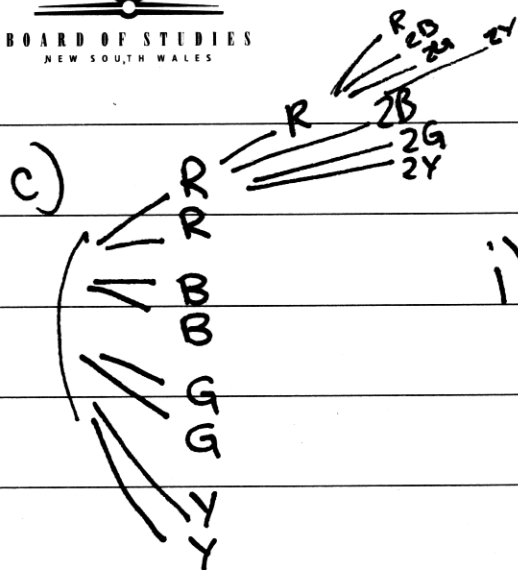
$$x^2 = \frac{3481}{240} - 1$$

$$x^2 = 3241/240$$

$$x = 3.674801582$$

$$x = 4 \text{ secs (1 sig fig)}$$

iii)  $21756\frac{1}{4} =$



i) Because after selecting 1 sock out of the possible 8, there is 7 socks left in the draw.  $\therefore$  There is 6 socks ~~to~~ he can choose that won't be the matching sock.

ii)  $3 \times 2 = 6$   
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