

a) i) because it is increasing at a decreasing rate, that is to say the common ratio is ~~at least~~ less than one, there is a ~~limit to that~~ value that this series will never meet.

$$ii) L.S = \frac{a}{1-r}$$

$$\frac{25}{1-\frac{1}{2}}$$

$$= 50$$

$$\frac{a+r}{1-r} = \frac{1+(\sqrt{5}-2) + (\sqrt{5}+2)}{1-(\sqrt{5}-2) + (\sqrt{5}+2)}$$

~~the~~

b) i) sub in $t=0$

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

$$= 25$$

ii) when $V = 6.25$

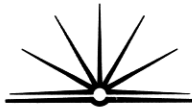
$$25\left(1 - \frac{t}{60}\right)^2 = 6.25$$

$$25\left(1 - \frac{2t}{60} + \frac{t^2}{3600}\right) = 6.25$$

$$25 - \frac{50t}{60} + \frac{25t^2}{3600} = 6.25$$

$$25 - \frac{5t}{6} + \frac{t^2}{144} = 6.25$$

$$25 - \frac{120t}{144} + \frac{t^2}{144} = 6.25$$



$$3600 - 120t + t^2 = 900$$

$$2700 - 120t + t^2 = 0$$

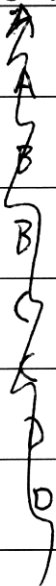
$$t^2 - 120t + 2700 = 0$$

bah

ii)

c) i) after drawing one sock, 7 are left, and only 6 of these do not match the one drawn

$$ii) \frac{6}{7} P(\text{mismatch}) = \frac{4}{7}$$



$$iii) \frac{2}{7}$$