BOARD OF STUDIES
NEW SOUTH WALES

QUESTION 7

a) $1 + (\sqrt{5}-2) + (\sqrt{5}-2)^2 +$

(i) limiting sum since $0 < r < 1$ (r is a fraction)

(ii) $S = \frac{a}{1-r}$ $\quad r = \sqrt{5}-2$

$$S = \frac{1}{1-(\sqrt{5}-2)} \times \frac{\sqrt{5}+2}{\sqrt{5}+2} = \frac{\sqrt{5}+2}{1-5+4} = \frac{\sqrt{5}+2}{}$$

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

(i) when $t=0$ $\quad V = 25$

(ii) when $V = \frac{25}{4}$

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

$$\frac{5}{4} = 5\left(1-\frac{t}{60}\right)$$

$$\frac{5}{4} = 5 - \frac{5t}{60}$$

$$3\frac{3}{4} = \frac{5t}{60}$$

$$225 = 5t \quad \therefore t = 45 \text{ seconds}$$

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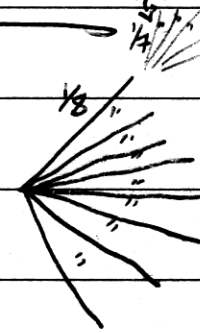
QUESTION 7

c) (i)



and so on

$\therefore$ 2 of 8 rocks are right

= 6 wrong

(7)

(ii) $P = \frac{4}{6} = \frac{2}{3}$ (as above)

(iii) $P = \frac{1}{3}$