

Question 7

a) i) AS it reaches 0

ii) lim sum

$$\frac{655}{123}$$

b) $V = 25 \left(1 - \frac{t}{60}\right)^2$ for $0 \leq t \leq 60$

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

= 87025 L when initially

on cooler \Rightarrow when $t = 0$

ii) $\frac{1}{4}$ of 87025 is 21756.25

$$21756.25 = 25 \left(1 - \frac{t}{60}\right)^2$$

$$870.25 = \left(1 - \frac{t}{60}\right)^2$$

$$29.5 = 1 - \frac{t}{60}$$

$$28.5 = -\frac{t}{60}$$

$$1710 = -t$$

$$-1710 = t$$

→

11) cont

After 1710 seconds the cooler was $\frac{1}{4}$ full.

iii) $\frac{1}{4}$ of cooler is 21756.25 L

it took 1710 sec to drain $\frac{3}{4}$ of cooler

draining at rate of 12.72295322 L per second.

$$\frac{21756.25}{1710}$$

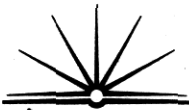
c) i) probability of matching socks.

7 socks left in drawer

one matching has been taken out \rightarrow leaves

6 different socks to match

probability is $\frac{6}{7}$



10/11

$\frac{4}{6}$ = 6 socks left only ~~one~~ two
will match original socks
so $\frac{4}{6}$ are not matching
gives probability of
 $\frac{4}{6}$ do not get
matching socks for
either first or second
sock drawn.

iii) $\frac{3}{6} \times \frac{2}{5}$
 $1 * \frac{1}{4} * \frac{4}{6}$

$= \frac{2}{21}$ probability first 3 socks
inc matching pair.