Start here for Question Number: 3

a) i $\frac{12-2}{2}$, $\frac{6-4}{2}$

$M: (5, 1)$

ii $m_{BC} = -\frac{2}{6}$

$= -\frac{1}{3}$

iii in Δs ABC & AMN

$\angle CAB$ is common

AN : AC = 1 : 2 (given)

AM : AB : 1 : 2 (given)

$\therefore \Delta ABC \parallel\parallel \Delta AMN$ (SAS)

iv $m_{MN} = -\frac{1}{3}$

$y - 2 = -\frac{1}{3}(x-2)$

$3y - 6 = 2 - x$

$3y + x - 8 = 0$

v $d = \sqrt{(12-6)^2 + (6-8)^2}$

$= \sqrt{36+4}$

$= \sqrt{40}$

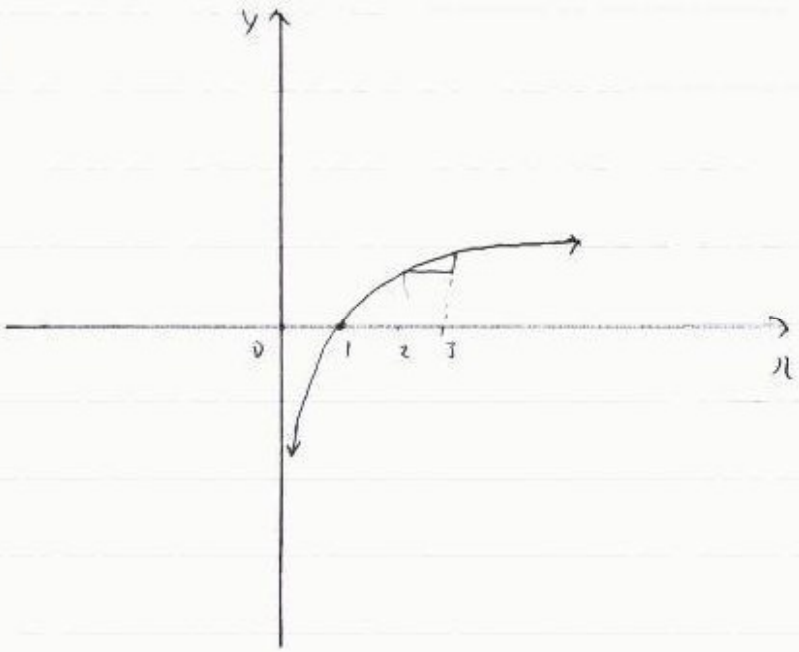
$A = \frac{1}{2} \times b \times h$

$44 = \frac{1}{2} \times h \times \sqrt{40}$

$h = \frac{88}{\sqrt{40}}$

$= \frac{11\sqrt{40}}{5}$

b)



ii

1	0	1	0
2	ln 2	2	2ln2
3	ln 3	1	ln 3
			ln 12

$A = \frac{1}{3} \times \ln 12$

$\doteq 0.828$ (to 3 dec. places)

iii Approximation is less, as part of the area underneath has not been included, ~~shown in the figure~~. as larger trapezoids have been used.

Additional writing space on back page.

You may ask for an extra Writing Booklet if you need more space to answer question 3.