

Start here for

Question Number: **3**

$$a) i) \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}$$

$$B(12, 6) \quad A(-2, -4)$$

$$\frac{12 + (-2)}{2}, \frac{6 + (-4)}{2}$$

$$(5, 1)$$

$$ii) \frac{y_2 - y_1}{x_2 - x_1} = \text{gradient}$$

$$B(12, 6) \quad C(6, 8)$$

$$\frac{(8 - 6)}{(6 - 12)} = -\frac{1}{3}$$

gradient can't be negative  
=  $\frac{1}{3}$

iii) MN is common

$$iv) \frac{y - y_1}{x - x_1} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\frac{y - 1}{x - 5} = \frac{2 - 5}{2 - 1}$$

$$y - 1 = -3(x - 5)$$

$$y - 1 = -3x + 15$$

$$y = -3x + 16$$

$$3x - y - 16 = 0$$

$$v) \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

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

$$= \sqrt{(36) + (4)}$$

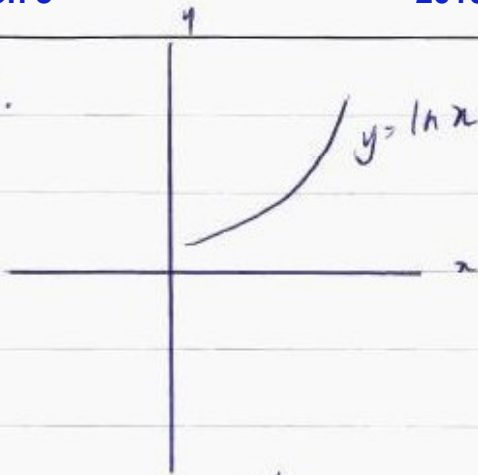
$$= \sqrt{40}$$

$$vi) \frac{ax + by + c}{\sqrt{a^2 + b^2}}$$

$$\frac{3(-2) + (-1)(-4) + k(-16)}{\sqrt{3^2 + (-1)^2}} = -2$$

$$= \frac{-6 + 4 - 16k}{\sqrt{10}} = -2$$

b) i.



70π

$$\text{ii) } \frac{h}{3} (f(\text{first}) + f(\text{last}) + f(\text{other}))$$

$$h = b - a$$

$$\frac{2}{3} \left( (0 + 1.095) + (0.69) \right)$$

	$x_0$	$x_1$	$x_2$
$x$	1	2	3
$y$	0	0.69	1.098

$$\frac{2}{3} \times 1.785 = 1.19$$

iii) It is greater than the exact value of 1.098 because  $\ln 3 - \ln 1 = 1.098$ .

Additional writing space on back page.

A large rectangular area with horizontal ruling lines, intended for writing the answer to Question 3.

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

