Start here for

Question Number: 3

(a) i.
$$M = \left(\frac{12-2}{2}, \frac{6-4}{2}\right)$$

= $\left(5, 1\right)$

ii.
$$MBC = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{8 - 6}{6 - 12}$$

$$= \frac{2}{-6}$$

$$= -1$$

IN DABC & DAMN 1 A is common

LAMN=LABE (corresponding angles)

LANM = < ACB (corresponding) angles)

KABE TH AAMA

 $d_{AM} = \int (-4-1)^2 + (-2-5)^2$ = $\int 25 + 49$

iii.
$$d_{AB} = \sqrt{(-4-6)^2 + (-2-12)^2}$$

= $\sqrt{160 + 196}$
= $\sqrt{296}$

$$d_{AN} = \sqrt{(-4-2)^2 + (-2-2)^2}$$

$$= \sqrt{36+16}$$

$$= \sqrt{52}$$

$$d_{AC} = \sqrt{(8+4)^2 + (6+2)^2}$$

$$= \sqrt{144+64}$$

$$= \sqrt{208}$$

$$\frac{AM}{AB} = \frac{\sqrt{74}}{\sqrt{296}} = \frac{AN}{AC} = \frac{\sqrt{52}}{\sqrt{208}}$$

$$= \frac{1}{\sqrt{2}}$$

iv.
$$M_{MN} = \frac{2-1}{2-5}$$
 (2,2)
= $-\frac{1}{3}$

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(iv) continued
$$M = -\frac{1}{3} \left(\frac{8}{2} \right)$$

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

$$3y = 6 = -x + 2$$
Equation $\Rightarrow x + 3y - 8 = 0$

(W)
$$M_{BC} = \frac{8-6}{6-12}$$

$$= -\frac{2}{6}$$

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

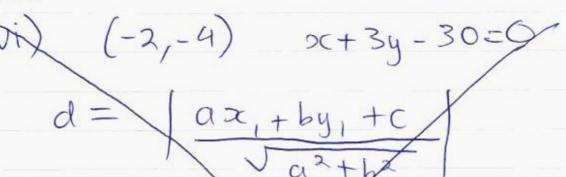
$$y-8 = -\frac{1}{3} (x-6)$$

$$3y-24 = -x+6$$

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

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

Start here.



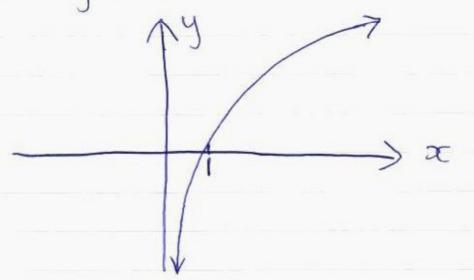
$$\frac{1}{1(-2)+3(-4)-30}$$

49 E By Mark

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

$$44 = \sqrt{10} \, \text{h}$$
 $h = \frac{44}{\sqrt{10}}$

(b) i. y= Lnx



ii.
$$A \approx \frac{h}{2} \left[y_1 + y_2 + 2 () \right]$$

 $\approx \frac{1}{2} \left[1 + 3 + 2 (2) \right]$

1111. $\int_{1}^{3} Ln \propto dx$

Less than the exact value.

 $h = \frac{3-1}{2}$ $h = \frac{3}{2}$ h = 1

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