## Question 3

## 2010 HSC Mathematics

#### Band 4/5 Sample 3

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d) i) M	$\left(\frac{12+(-2)}{2}, \frac{b}{2}\right)$	$\left(\frac{+(-4)}{2}\right)$	
= N	$\left(\frac{12-2}{2}, \frac{6-4}{2}\right)$	)	
= /	$\left(\frac{10}{2},\frac{2}{2}\right)$		
= M	(5,1)		
ii) m <sub>BC</sub>	X2 - X1		
	$= \frac{6-8}{12-b}$		
	= -2		
	5		
iu) 17.	ABC, NAMN	In AABC, JAMN	
4	+ is paymen	LA is common AB AC - 2	
H	10	$\frac{AB}{AM} = \frac{AC}{A0} = \frac{2}{1}$	
		(sides are proportion	nol with)
		some ratio	/
		DABC III JAMN	
		f 2 pairs of sides are included a	in proportion hyle is equal

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Sample 3 IV) M(5,1) N(2,2)  $m_{MN} = \frac{1-2}{5-2}$ = -|  $x y - 1 = -\frac{1}{3}(x - 5)$  $y - 1 = -\frac{1}{3}x + \frac{5}{3}$  $y = -\frac{1}{3}\chi + \frac{5}{7} + 1$  $y = -\frac{1}{3}x + \frac{8}{5}$ V)  $d_{BC} = \int (\pi_2 - \kappa_1)^2 + (\gamma_2 - \gamma_1)^2$  $= \int (12-6)^2 + (6-8)^2$  $= \int (6)^2 + (-2)^2$ = 136+4 = 540 = 2510 2510 i length of BC =  $\frac{1}{250}$  units vi)  $A = \frac{1}{2}bxh$   $b = \frac{1}{260} \cdot d_{BC}$  h = ? A = 44250 44= 1 × 540 ×h 44 x 2 - = = L -P 44x2x1 =h h = 44 250 44 units 88 .: perp distance from A to BC Zy Additional writing space on back page.

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14 Y=Inx 6) 1) 72 (1,0)  $ii) \int_{1}^{3} \ln x \, dx$  $\frac{\chi}{V} = \frac{1}{0.000} = \frac{2}{0.693} = \frac{3}{1.099}$ = h [first + lost + 2x middle] h= b-2 = 3-1  $=\frac{1}{3}\left[0+1.099+2\times0.693\right]$ 600 497 (iii) Ander The approximation would be greater than the exact value of f? Invidor due to the approximation using alloss of rectangles between the junction verses which is ever means the affer approximation is slightly greater then the exact value is the rectingles go above the curve.

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

