PANDUAN PENSKORAN

NO SOALAN	SKEMA	SUB MARKAH	JUMLAH MARKAH
1	a) $p = -\frac{2}{3}$	N1	**7**
	b) $\frac{k+1}{2+3(1)} = 1$ $k = 4$	K1 N1	
	c) $\frac{4+x}{2+3x} = y$ untuk cari x @ $\frac{4+y}{2+3y} = x$ untuk cari y $f^{-1}(x) = \frac{4-2x}{3x-1}, x \neq \frac{1}{3}$ Ganti $x = 3$ ke dalam fungsi $*f^{-1}(x)$ $* -\frac{1}{4} \leq f^{-1}(x) \leq 1$ SS-1 jika tiada , $x \neq \frac{1}{3}$	K1 N1 K1 N1	
2	a) $\frac{1}{2}\left\|[(-3)(-2)+6(0)+0(4)]-[4(6)+(-2)(0)+0(-3)]\right\|$ 9	K1 N1	**7**
	b) $\frac{3(6)+2(-3)}{3+2}$ *or* $\frac{3(-2)+2(4)}{3+2}$ $\left(\frac{12}{5}, \frac{2}{5}\right)$	K1 N1	
	c) $\sqrt{(x-(-3))^2+(y-4)^2}$ *or* $\sqrt{(x-6)^2+(y-(-2))^2}$ $\sqrt{(x-(-3))^2+(y-4)^2} = 2\sqrt{(x-6)^2+(y-(-2))^2}$ $x^2+y^2-18x+8y+45=0$	K1 K1 N1	

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3	**ALTERNATIF A** $\frac{5+25}{2}$ @ $\frac{-(-12)}{2\left(\frac{2}{5}\right)}$ $x = 15$	K1	
	$\frac{2}{5}(15)^2 - 12(15) + 50$	K1	
	–40	N1	
	$\frac{2}{5}\left(*15 - \frac{25}{2}\right)^2 - 12\left(*15 - \frac{25}{2}\right) + 50$ @ $\frac{2}{5}\left(*15 + \frac{25}{2}\right)^2 - 12\left(*15 + \frac{25}{2}\right) + 50$ 22.5	K1	
	|*–40| + *22.5	K1	
	62.5	N1	
	ALTERNATIF B		**6**
	$\frac{2}{5}\left(x^2 - 30x + \left(\frac{-30}{2}\right)^2 - \left(\frac{-30}{2}\right)^2\right) + 50$	K1	
	$\frac{2}{5}(x-15)^2 - 40$	N1	
	–40	N1	
	$\frac{2}{5}\left(*15 - \frac{25}{2}\right)^2 - 12\left(*15 - \frac{25}{2}\right) + 50$ @ $\frac{2}{5}\left(*15 + \frac{25}{2}\right)^2 - 12\left(*15 + \frac{25}{2}\right) + 50$ 22.5	K1	
	|*–40| + *22.5	K1	
	62.5	N1	

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4	a) Guna $S_n = T_1 + T_2 + T_3 + \cdots + T_{n-1} + T_n = a + (n-1)d$ $S_{n1} = a + (a+d) + (a+2d) + \cdots + [a + (n-1)d] + [a + (n-1)d]$ @ $S_{n2} = [a + (n-1)d] + [a + (n-2)d] + \cdots + (a+2d) + (a+d)$ $S_{n1} + S_{n2}$ $2S_n = [2a + (n-1)d] + [2a + (n-1)d] + \cdots$ $S_n = \frac{n}{2}[2a + (n-1)d]$	P1 K1 N1	**7**
	b) $\frac{9}{2}[2(500) + (9-1)(-10)]$ --- 4140 $500 + (9-1)(-10)$ --- 420 $[*4140 + (*420 + *420 \times 50\%)] \times 8$ 38160	K1 K1 K1 N1	
5	*a*) $x + y + 5 = 15$ $y = 10 - x$ @ $x = 10 - y$ $x^2 + 23*(10 - x) - 110 = 0$ @ $*(10-y)^2 + 23y - 110 = 0$ Selesaikan *persamaan kuadratik, $b \neq 0$ --- $(x-15)(x-8) = 0$ @ $(y+5)(y-2) = 0$ atau kaedah lain $x = 8$ @ $y = 2$ $y = 2$ @ $x = 8$ b) $1(8) + 8(2) = 24$ $2(8) + 6(2) = 24$ $3(8) + 2(2) = 24$	P1 P1 K1 K1 N1 N1 N1	**7**

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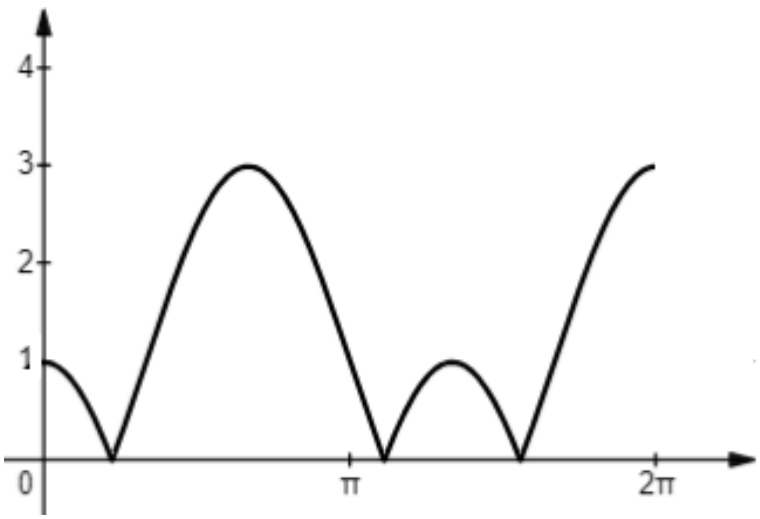
6	(a) $\dfrac{\sin\theta\ kos\ \frac{\pi}{2} + kos\ \theta \sin\frac{\pi}{2}}{1 - \left(kos\ \theta \operatorname{kos}\frac{\pi}{2} - sin\ \theta \sin\frac{\pi}{2}\right)}$ $\dfrac{kos\ \theta}{1 + sin\ \theta}$ $\dfrac{kos\ \theta\ (1 - sin\ \theta)}{1 - sin^2\ \theta}$ $\dfrac{kos\ \theta\ (1 - sin\ \theta)}{kos^2\ \theta}$ $\dfrac{1 - sin\ \theta}{kos\ \theta}$ $sek\ \theta - \tan\theta$	K1 N1	
	(b)  Bentuk graf kosinus $1\frac{1}{2}$ Kitaran Anjakan 1 unit ke bawah & Mutlak	P1 P1 P1	
	(c) $1 < t < 3$	N1	

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7	*a*) $\frac{x}{1.5x} = \frac{r}{h}$ $V = \frac{4\pi}{27}h^3$ Nota: mesti lihat ada guna rumus isi padu kon	P1 N1	**10**
	b) Beza V terhadap h $\frac{dV}{dh} = 36\pi$ $*36\pi \times (8.97 - 9)$ $\delta V = -1.08\pi$ $\frac{* -1.08\pi}{\frac{4\pi}{27}(9)^3} \times 100$ Menurun 1%	K1 K1 K1 N1	
	c) Beza *A* terhadap *h* dan ganti $h = 9$ ke dalam $\frac{dA}{dh}$ 8π $-25\pi = *8\pi \times \frac{dh}{dt}$ $\frac{dh}{dt} = -\frac{25}{8}$ $*36\pi \times *\left(-\frac{25}{8}\right)$ -112.5π	K1 K1 K1 N1	
8	a) i) $\overrightarrow{PU} = \overrightarrow{PT} + \overrightarrow{TU}$ atau $\overrightarrow{QU} = \overrightarrow{QP} + \overrightarrow{PT} + \overrightarrow{TU}$ $2\underline{a} + 3\underline{b}$ ii) $\overrightarrow{QU} = \overrightarrow{QP} + \overrightarrow{PT} + \overrightarrow{TU}$ $2\underline{a} + \underline{b}$	P1 N1 N1	**10**

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	b) $\overrightarrow{UR} = -\underline{a} - \underline{b}$ $\overrightarrow{UR} = m\overrightarrow{UP}$ $m_1 = \frac{1}{2}$ $m_2 = \frac{1}{3}$ RPU tidak segaris kerana $\frac{1}{2} \neq \frac{1}{3}$.	N1 P1 N1	
	c) $\overrightarrow{QU} = 2\underline{a} + \underline{b}$ $= 2\left(-2\underline{i} - n\underline{j}\right) + n\underline{j}$ $= -4\underline{i} - 2n\underline{j} + n\underline{j}$ $= -4\underline{i} - n\underline{j}$ Unit Vektor $QU = \frac{-4\underline{i}-n\underline{j}}{\sqrt{(-4)^2+(-n)^2}} = \frac{2}{\sqrt{m}}(-2\underline{i} + 2\underline{j})$ $\frac{-4\underline{i}-n\underline{j}}{\sqrt{(-4)^2+(-n)^2}} = \frac{-4\underline{i}+4\underline{j}}{\sqrt{m}}$ Bandingkan: $-n = 4$ $n = -4$ $\sqrt{(-4)^2 + (4)^2} = \sqrt{m}$ $m = 16 + 16$ $m = 32$	 N1 K1 N1 N1	
9	*a*) i) $r = ab$ *or* Min $= ab$ *or* $\mu = ab$ $s = ab(1-b)$ *or* Varians $= ab(1-b)$ *or* $\sigma^2 = ab(1-b)$ $s = ab - ab^2$ *or* Varians $= ab - ab^2$ *or* $\sigma^2 = ab - ab^2$	K1 N1	**10**
	ii) $P(X = 7)$ $= {}^{10}C_7 \times 0.85^7 \times 0.15^3$ $= 0.1298$	 K1 N1	
	b) i) Tulis $P\left(Z \geq \frac{x-150}{10}\right) = \frac{350}{500}$ $\frac{x-150}{10} = -0.524$ 144.76	P1 K1 N1	

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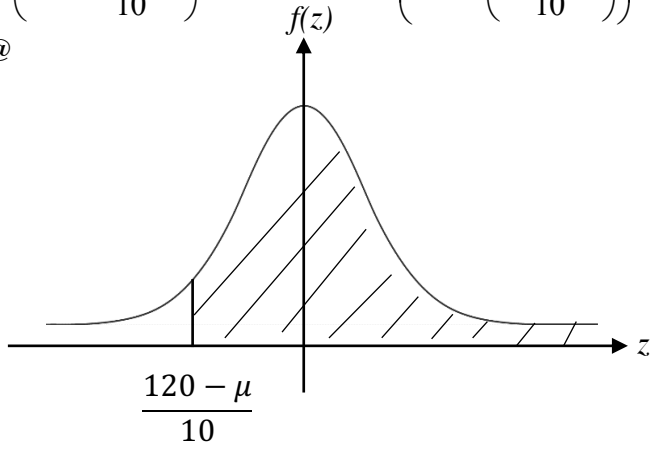
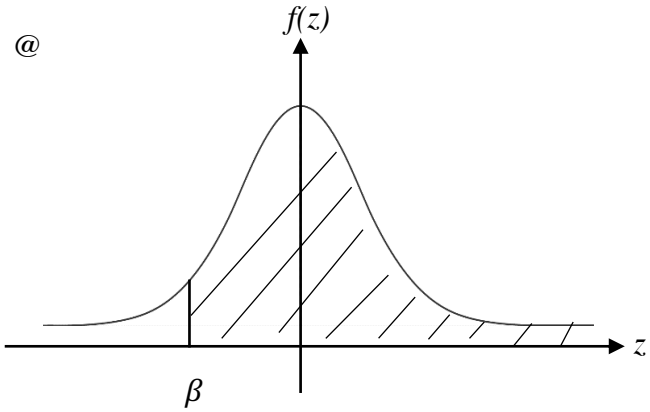
	ii) $P\left(Z \geq \frac{120-\mu}{10}\right) = 0.9$ dan $1-P\left(Z > -\left(\frac{120-\mu}{10}\right)\right) = 0.9$ @  OR $P(Z \geq \beta) = 0.9$ dan $1-P(Z > -\beta) = 0.1$ @  $\frac{120-\mu}{10} = -1.281$ // -1.282 132.81//132.82	K1 K1 N1	
10	(a) Hapus satu anu bagi $y = \frac{2}{x^2}$ dan $x = 4y$ $\frac{2}{x^2} = \frac{x}{4}$ $A\left(2, \frac{1}{2}\right)$	K1 N1	**10**
	(b) Kamir $\frac{2}{x^2}$ terhadap x Guna had $\int_{\frac{1}{4}}^{2}$ ke dalam *kamiran, $\left[\frac{2(2)^{-1}}{-1} - \left(\frac{2(\frac{1}{4})^{-1}}{-1}\right)\right]_{\frac{1}{4}}^{2}$ @ $32\left(\frac{1}{4}\right)$ dan $\frac{1}{2}(2)\left(\frac{1}{2}\right)$	K1 K1	

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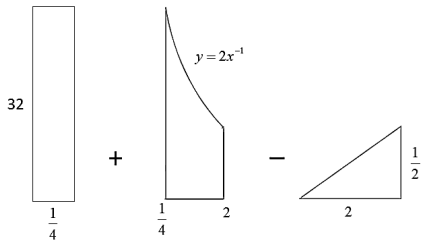
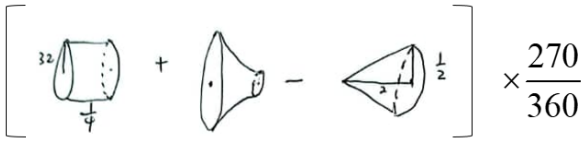
	$A_1 = 7, \quad A_2 = 8, \quad A_3 = \frac{1}{2}$ $^*A_1 + \quad ^*A_2 - \quad ^*A_3$ $14\frac{1}{2}$ **Nota:**  $32\left(\frac{1}{4}\right) + \int_{\frac{1}{4}}^{2} 2x^{-2}dx - \frac{1}{2}(2)\left(\frac{1}{2}\right)$	K1 N1	
	(c) Kamir $4x^{-4}$ terhadap x dan guna had $\int_{\frac{1}{4}}^{2}$ ke dalam *kamiran $V_1 = 85\frac{1}{6}\pi$ $\pi(32)^2\left(\frac{1}{4}\right) \quad @ \quad \frac{1}{3}\pi\left(\frac{1}{2}\right)^2(2)$ $V_2 = 256\pi, \quad V_3 = \frac{1}{6}\pi$ $(^*V_1 + ^*V_2 - ^*V_3) \times \frac{270}{360}$ $255\frac{3}{4}\pi$ **Nota:**  $\left[\pi(32)^2\left(\frac{1}{4}\right) + \int_{\frac{1}{4}}^{2}\pi\left(4x^{-4}\right)dx - \frac{1}{3}\pi\left(\frac{1}{2}\right)^2(2)\right] \times \frac{270}{360}$	K1 K1 K1 N1	

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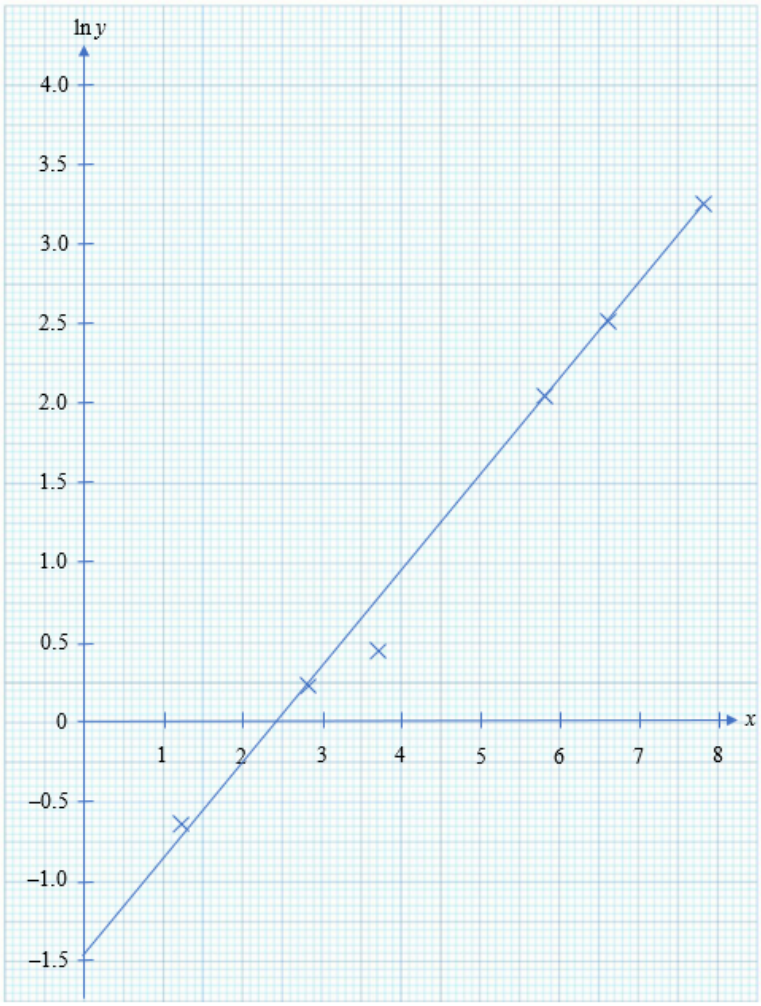
a)

x	1.2	2.8	3.7	5.8	6.6	7.8
ln y	–0.65	0.22	0.44	2.04	2.52	3.24

N1

b)



Graf garis lurus ln y melawan x dilukis — K1

- Paksi-paksi betul dan skala seragam dari titik pertama sehingga titik terakhir
- Sekurang-kurangnya satu *titik diplot betul — N1
- 6 *titik diplot dengan betul
- Garis lurusn penyuaian terbaik — N1

c)i)

$\ln y = \frac{m}{n}x + n$ — P1

$n = -1.45 \pm 0.05$ — N1

c)ii)

Cari *kecerunan $= \frac{m}{n}$ — K1

(Dua *titik diambil dari garis lurus penyuaian terbaik)

$m = -0.7975$ — N1

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	d) Boleh diterima Kerana beza nilai dalam lingkungan 0.05. (Mesti ada nilai 0.80* dan 0.76) @ Kerana beza nilai dalam lingkungan 0.10. (Mesti ada nilai 2.23* dan 2.14)	N1 N1	
12	a) $\frac{x}{3.2} \times 100 = 115$ @ $\frac{1.2}{y} \times 100 = 80$ $x = 3.68, y = 1.50$	K1 N1, N1	**10**
	b) $\frac{114}{120} \times 100$ 5	K1 N1	
	c) 112.50 $\frac{115(4) + 120(3) + 80z}{4 + 3 + z} = 112.50$ 1	P1 K1 N1	
	d) $\frac{*112.5 \times 110}{100}$ **dan** $*123.75 = \frac{P_{23}}{7} \times 100$ @ $*112.5 = \frac{P_{22}}{7} \times 100$ **dan** $110 = \frac{P_{23}}{*7.88} \times 100$ 19	K1 N1	

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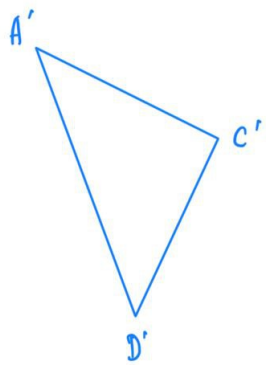
13	$a)$ $AB^2 = 7.1^2 + 8^2 - 2(7.1)(8)cos50°$ $AB = 6.433$ $\frac{\sin \angle BAC}{7.1} = \frac{sin50}{6.433}$ $\angle BAC = 57.7$	K1 N1 K1 N1	**10**
	$b)$ $180° - *57.7° - 100° = 22.3°$ $\frac{AD}{sin *57.7°} = \frac{8}{sin\ 100°}$ --- $AD = 6.866$ $\frac{1}{2}(7.1)(8)sin50° @ \frac{1}{2}(*6.866)(8)sin*22.3°$ --- $A_1 = 21.756, A_2 = 10.421$ $*A_1 + *A_2$ 32.17 @ 32.18	P1 K1 K1 K1 N1	
	$c)$ $AB^2 = 7.1^2 + 8^2 - 2(7.1)(8)cos50°$ $AB = 6.433$ $\frac{\sin \angle BAC}{7.1} = \frac{sin50}{6.433}$ $\angle BAC = 57.7$  	K1 N1 K1 N1	

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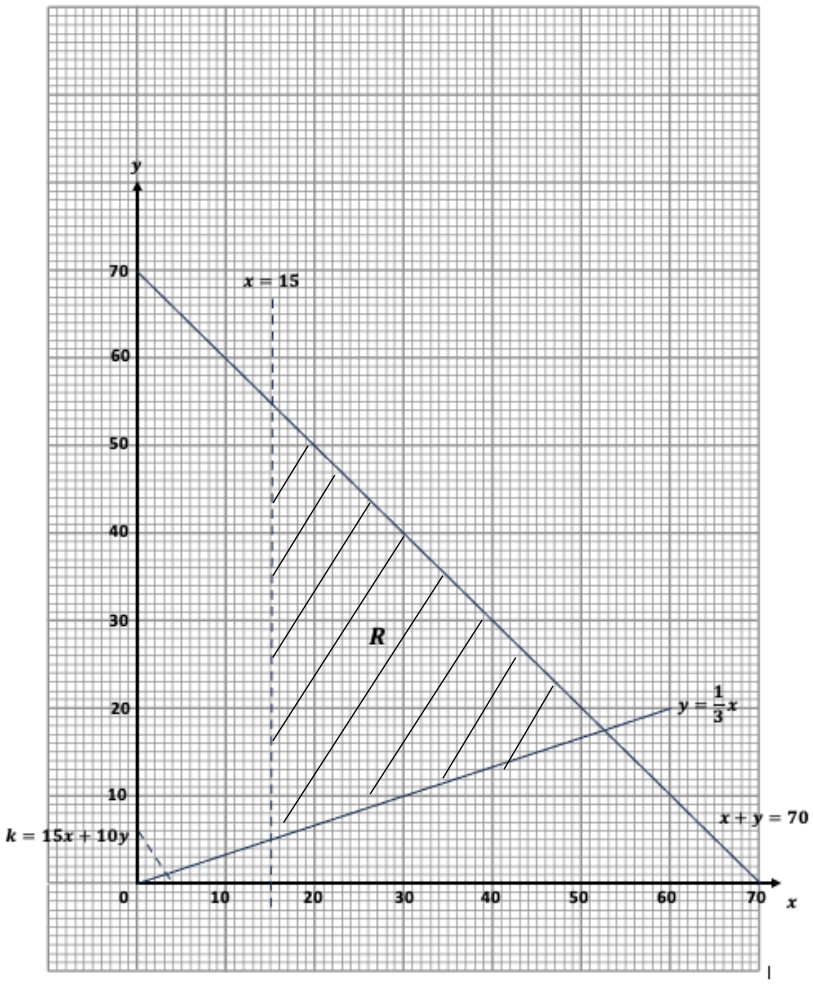
14	a) $x + y \leq 70$ $x > 15$ $y \geq \frac{1}{3}x$	 N1 N1 N1	**10**
	b) Lukis sekurang-kurangnya satu *garis lurus dengan betul Lukis dengan betul *semua garis lurus Rantau dilorek dengan betul  	 K1 N1 N1	
	c) Tulis dan lukis fungsi objektif $k = 15x + 10y$ Titik optimum (16,6) $k = 15(16) + 10(6)$ $k = 300$ $1200 - 300 = 900$	 P1 N1 K1 N1	

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15	(a) Beza v_A terhadap t $a = 2t - k$ Gantikan $t = 4$ dan $a = 3$ ke dalam $*a_A$ untuk mencari m $2(4) - k = 3$ 5	K1 K1 N1	
	(b) Guna $*v < 0$ **DAN** selesaikan *persamaan kuadratik $t^2 - *5t - 6 < 0$ dan $(t + 1)(t - 6) < 0$ $0 \le t < 6$	K1 N1	
	(c) i) $\left\lvert \frac{(6)^3}{3} - (6)^2 - 20(6) - 10 \right\rvert$ @ $\left\lvert \frac{(6)^3}{3} - (6)^2 - 20(6) \right\rvert + 10$ 94 ii) Kamirkan v_A terhadap t $s_A = \frac{t^3}{3} - \frac{5t^2}{2} - 6t$ Samakan s_A & s_B **DAN** Selesaikan *persamaan kuadratik $*\left(\frac{t^3}{3} - \frac{5t^2}{2} - 6t\right) = \frac{t^3}{3} - t^2 - 20t - 10$ @ $*\left(\frac{t^3}{3} - \frac{5t^2}{2} - 6t\right) + 10 = \frac{t^3}{3} - t^2 - 20t$ **DAN** $(3t + 2)(t - 10) = 0$ 10 Nota: $\int ar^n dr$ mesti betul sekurang²nya dua sebutan dengan kuasa r bertambah 1 $\frac{d}{dr}\left(ar^n\right)$ mesti betul sekurang²nya dua sebutan dengan kuasa r berkurang 1	K1 N1 K1 K1 N1	

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