PROGRAM GEMPUR KECEMERLANGAN
SIJIL PELAJARAN MALAYSIA 2024
NEGERI PERLIS

SIJIL PELAJARAN MALAYSIA 2024 3472/2(PP)

MATEMATIK TAMBAHAN
Kertas 2
Peraturan Pemarkahan
September

UNTUK KEGUNAAN PEMERIKSA SAHAJA

Peraturan pemarkahan ini mengandungi 18 halaman bercetak

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No.	Peraturan Permarkahan	Markah	Jumlah Markah
1			
(a)	$\alpha + \beta = -4$ @ $\alpha\beta = 6$ [1m] $\frac{1}{\alpha}+\frac{1}{\beta}=\frac{\alpha+\beta}{\alpha\beta}=-\frac{2}{3}$ atau $\frac{1}{\alpha}\times\frac{1}{\beta}=\frac{1}{\alpha\beta}=\frac{1}{6}$ (1m) $6x^2 + 4x + 1 = 0$ [1m]	**3**	
(b)	$x^2 - 4x + 5 = m + 2x - x^2$ dan guna $b^2 - 4ac$ (1m) $(-6)^2 - 4(2)(5 - m) = 0$ $m = \frac{1}{2}$ [1m] $\left(\frac{3}{2}, \frac{5}{4}\right)$ (1m)	**3**	**6**

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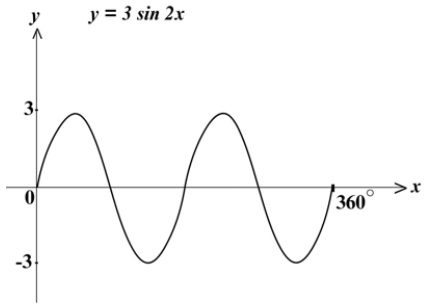
No.	Peraturan Permarkahan	Markah	Jumlah Markah
2			
(a)	Guna $Sin^2x + Kos^2x = 1$ (1m) 3 Sin 2x [1m]	**2**	
(b)	Sudut rujukan = 19.47° [1m] $2x = 19.47°, 160.53°, 379.47°, 520.53°$ (1m) $x = 9.735°, 80.265°, 189.375°, 260.265°$ [1m]	**3**	
(c)	 Bentuk graf sinus [1m] 2 kalaan $(0° \geq x \geq 360°)$ [1m] Maksimum dan minimum [1m]	**3**	**8**

No.	Peraturan Permarkahan	Markah	Jumlah Markah
3			
(a)	$BB' = 42 \times \left(150° \times \frac{\pi}{180°}\right)$ (1m) $BB' = 109.97cm$ [1m]	2	
(b)	$AA' = 7 \times \left(150° \times \frac{\pi}{180°}\right)$ [1m] $\frac{AA'}{BB'} = \frac{7\times\left(150°\times\frac{\pi}{180°}\right)}{42\times\left(150°\times\frac{\pi}{180°}\right)}$ (1m) $= \frac{7}{42}$ 1:6 [1m]	3	
(c)	$\left[\frac{1}{2} \times 42^2 \times 2.618\right] - \left[\frac{1}{2} \times 7^2 \times 2.618\right]$ (1m) 2244.94 cm^2 [1m]	2	7

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No.	Peraturan Permarkahan	Markah	Jumlah Markah
4			
(a)	Guna $\log_5 1215 = 5k + 6$ (1m)		
	$5\log_5 3 + \log_5 5 = 5k + 6$ (1m)		
	$k = h - 1$ [1m]	**3**	
(b)	$\log_e e^x = \log_e 8^2$ (1m)		
	$x = 2m$ [1m]	**2**	
(c)	Tulis $\left(\sqrt{2x-3}\right)^2 = \left(4 - \sqrt{2x-1}\right)^2$ (1m)		
	$2x - 3 = 16 - 8\sqrt{2x-1} + 2x - 1$ (1m)		
	$x = \frac{97}{32}$ @ 3.03125 [1m]	**3**	
			8

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No.	Peraturan Permarkahan	Markah	Jumlah Markah
5			
(a)	$\overrightarrow{PU} = \overrightarrow{PR} + \overrightarrow{RU}$ atau $\overrightarrow{PU} = \overrightarrow{PS} + \overrightarrow{SU}$ atau $\overrightarrow{PT} = \overrightarrow{PQ} + \overrightarrow{QT}$ (1m) $\overrightarrow{ST} = \frac{2}{3}\overrightarrow{SQ}$ (1m) $\overrightarrow{PU} = \frac{4}{3}\underset{\sim}{x} + \frac{2}{3}\underset{\sim}{y}$ [1m] $\overrightarrow{PT} = \frac{2}{3}\underset{\sim}{x} + \frac{1}{3}\underset{\sim}{y}$ [1m]	4	
(b)	Tulis $\overrightarrow{PU} = \lambda \overrightarrow{PT}$ [1m] $\overrightarrow{PU} = 2\left(\frac{4}{3}\underset{\sim}{x} + \frac{2}{3}\underset{\sim}{y}\right)$ (1m) $\overrightarrow{PU} = 2\overrightarrow{PT}$ [1m]	3	7

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No.	Peraturan Permarkahan	Markah	Jumlah Markah
6	$x + y + z = 140$ 1m $25{,}000x + 40{,}000y + 50{,}000z = 5{,}150{,}000$ 1m $30{,}000x + 50{,}000y + 60{,}000z = 6{,}300{,}000$ 1m Hapuskan anu pertama dengan penggantian @ penghapusan 1m Hapuskan anu kedua dengan penggantian @ penghapusan 1m $x = 50$ @ $y = 60$ @ $z = 30$ 1m $y = 60$ dan $z = 30$ atau 1m $x = 50$ dan $z = 30$ atau $y = 60$ dan $z = 30$	7	7

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No.	Peraturan Permarkahan	Markah	Jumlah Markah
7			
(a)	Tulis $T_1 = \pi\left(\frac{2a}{2}\right) + 2a \ @ \ a(\pi+2)$ $T_2 = \pi\left(\frac{3a}{2}\right) + 3a \ @ \ \frac{3}{2}a(\pi+2)$ $T_3 = \pi\left(\frac{4a}{2}\right) + 4a \ @ \ 2a(\pi+2)$ 1m Guna $a(\pi+2) + \frac{3}{2}a(\pi+2) + 2a(\pi+2)$ 1m $\frac{9}{2}a(\pi+2)$ 1m	3	
(b)	Guna $\frac{3}{2}a(\pi+2) - a(\pi+2) = 2a(\pi+2) - \frac{3}{2}a(\pi+2)$ 1m $\frac{1}{2}a(\pi+2) = \frac{1}{2}a(\pi+2)$ 1m Dan Janjang Aritmetik	2	
(c)	Guna $T_n = 12(\pi+2)$ 1m --- $\left(\frac{n+1}{2}\right)a(\pi+2) = 12(\pi+2)$ n = 11 1m	2	7

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No.	Peraturan Permarkahan	Markah	Jumlah Markah
8			
(a)	1m K | 0.50 | 0.75 | 1.00 | 1.25 | 1.50 | 1.75 $\sqrt{p}$ | 0.65 | 2.24 | 3.81 | 5.25 | 6.80 | 8.30 1m	2	
(b)	Plot $\sqrt{p}$ melawan K (1m) (paksi betul dan skala seragam) 6 titik diplot dengan betul (1m) Garis lurus penyuaian terbaik (1m)	3	
(c)	$\sqrt{p} = \frac{2}{\mu}K + \frac{2A}{\mu}$ 1m $* c = \frac{2A}{\mu}$ 1m 1m $* m = \frac{2}{\mu}$ $A = -0.3875$ 1m 1m $\mu = 0.3298$	5	
			10

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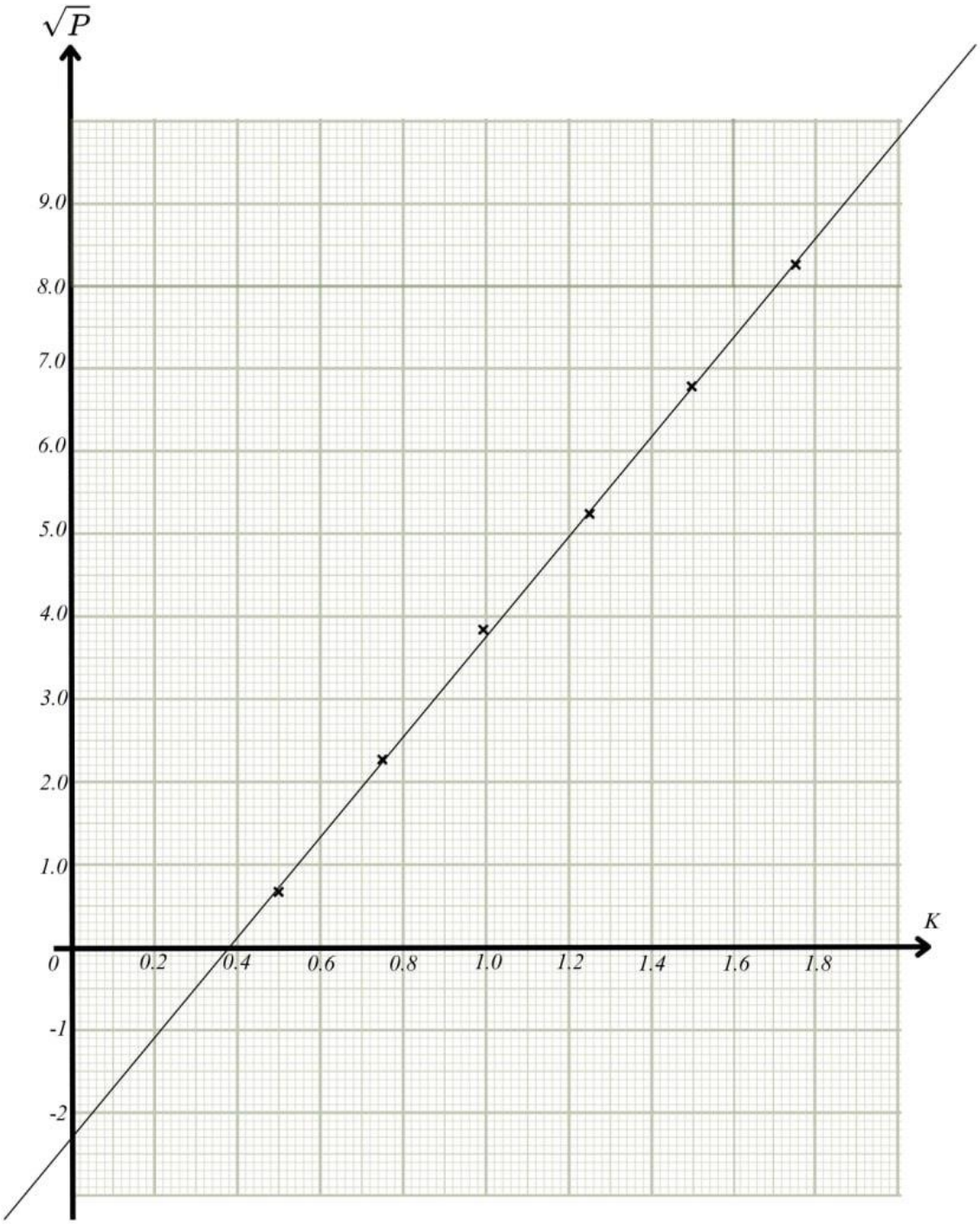
Graf soalan **8**(*b*)



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No.	Peraturan Permarkahan	Markah	Jumlah Markah
9 **(a)**	Selesaikan persamaan serentak (1m) $x(2x-5)=0$ $A=(\frac{5}{2},\frac{5}{2})$ [1m]	**2**	
(b)	Cari luas segitiga atau gantikan had $\int_2^{\frac{5}{2}} 2x^2-4x\,dx$ (1m) $A_1=\frac{1}{2}(\frac{5}{2})(\frac{5}{2})$ $A_2=\left[\left(\frac{2(\frac{5}{2})^3}{3}-\frac{4(\frac{5}{2})^2}{2}\right)-\left(\frac{2(2)^3}{3}-\frac{4(2)^2}{2}\right)\right]$ Kamirkan $\int 2x^2-4x\,dx$ (1m) $\left[\frac{2x^3}{3}-\frac{4x^2}{2}\right]$ $*A_1 -* A_2 +* A_3$ (1m) $\frac{125}{24}$ unit^2 [1m]	**4**	
(c)	Kamirkan $\int \pi y^2\,dx$ (1m) $\pi\left[\frac{4x^5}{5}-\frac{16x^4}{4}+\frac{16x^3}{3}\right]$ atau $\pi\left[\frac{x^3}{3}\right]$ Guna had $\int_2^{\frac{5}{2}} kedalam$ $\left[\frac{4x^5}{5}-\frac{16x^4}{4}+\frac{16x^3}{3}\right]$ (1m) $\boldsymbol{\pi\left(\frac{125}{24}-\frac{113}{120}\right)}$ (1m) $\frac{64}{15}\pi$ unit^3 [1m]	**4**	
			10

No.	Peraturan Permarkahan	Markah	Jumlah Markah
10			
(a)	Guna $\sqrt{(9-2)^2+(4-3)^2}$ (1m) $\sqrt{50}$ unit [1m]	**2**	
(b)	$\sqrt{(x-2)^2+(y-3)^2}=\sqrt{50}$ (1m) $x^2+y^2-4x-6y-37=0$ [1m]	**2**	
(c)			
(i)	$90°$ atau $\frac{3}{2}\pi$ [1m] $\frac{1}{2}\left(\sqrt{50}\right)^2\left(\frac{3}{2}\pi\right)$ (1m) $\frac{75}{2}\pi$ unit [1m]	**3**	
(ii)	$\frac{1}{2}\left(\sqrt{50}\right)\left(\sqrt{50}\right)$ atau $\frac{1}{2}\pi(5)^2$ (1m) $\frac{75}{2}\pi-\left(\frac{25}{2}\pi-25\right)$ (1m) $25(\pi+1)$ unit^2 [1m]	**3**	
			10

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No.	Peraturan Permarkahan	Markah	Jumlah Markah
11			
(a)	$z = -2.0$ atau $z = 0.667$ [1m]		
	$P\left(Z > \frac{1.5-\mu}{\sigma}\right) = 0.0228$ atau $P\left(Z > \frac{3.5-\mu}{\sigma}\right) = 0.252$ (1m)		
	$\frac{1.5-\mu}{\sigma} = -2.0$ $\quad$ $\frac{3.5-\mu}{\sigma} = 0.667$		
	Selesaikan persamaan serentak (1m)		
	$2.667\sigma = 2$		
	$\sigma = 0.7499$ [1m]		
	$\mu = 2.9998$ (1m)	5	
(b) (i)	$1 - \left(\frac{5}{128} + \frac{21}{128} + \frac{21}{128} + \frac{61}{128}\right)$ (1m)		
	$\frac{5}{32}$ [1m]	2	
(ii)	${}^{5}C_2 \times p^2 \times q^3 + {}^{5}C_3 \times p^3 \times q^2 = \frac{5}{32}$ (1m)		
	$q^2(p+q) = \frac{1}{64p^2}$		
	Ganti $p + q = 1$ (1m)		
	$q = \frac{1}{8p}$ (1m)	3	10

[*Lihat halaman sebelah*

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No.	Peraturan Permarkahan	Markah	Jumlah Markah
12			
(a)	$a = 4 - 6t$ $a = 4 - 6(0)$ 1m 4 1m	**2**	
(b)	$4 - 6t = 0$ $t = \frac{2}{3}$ 1m $4\left(\frac{2}{3}\right) - 3\left(\frac{2}{3}\right)^2 + 7$ 1m $\frac{25}{3}$ 1m	**3**	
(c)	$-3t^2 + 4t + 7 = 0$ $3t^2 - 4t - 7 = 0$ $(3t - 7)(t + 1) = 0$ 1m $t = \frac{7}{3}$ 1m	**2**	
(d)	$\int_0^2 (-3t^2 + 4t + 7)dt$ $\left[-\frac{3t^3}{3} + \frac{4t^2}{2} + 7t\right]_0^2$ 1m $[-(2)^3 + 2(2)^2 + 7(2)] - [-(0)^3 + 2(0)^2 + 7(0)]$ 1m 14 1m	**3**	**10**

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No.	Peraturan Permarkahan	Markah	Jumlah Markah
13			
(a)	$\measuredangle BAC = 67.38°$ [1m] $BC^2 = 0.2^2 + 0.3^2 - 2(0.2)(0.3)\ kos\ 67.38°$ (1m) 0.2896 km [1m]	**3**	
(b)	$\frac{\sin BCA}{0.2} = \frac{\sin 67.38°}{0.2896}$ (1m) 39.61° [1m]	**2**	
(c)	Luas ADE, $\frac{1}{2} \times 0.13 \times 0.06 \times \sin 67.38°$ (1m) 0.0036 Luas FGC, $\frac{1}{2} \times GF \times GC$ $\sin 39.61° = \frac{GF}{FC}$ atau $\text{kos}\ 39.61° = \frac{GC}{FC}$ (1m) $GF = FC \times \sin 39.61°$ atau $GC = FC \times \text{kos}\ 39.61°$ $\frac{1}{2}[FC \times \sin 39.61° \times FC \times \text{kos}\ 39.61°] = 0.0036$ (1m) $FC = 0.12107$ [1m] 0.09328 km (1m)	**5**	**10**

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No.	Peraturan Permarkahan	Markah	Jumlah Markah
14			
(a)	$2x + 3y \geq 100$ [1m] $x + y \leq 65$ [1m] $x > 2y$ [1m]	**3**	
(b)	Lukis dengan betul sekurang-kurangnya satu garis lurus dari ketaksamaan yang melibatkan x dan y (1m) Lukis dengan betul semua garis lurus (1m) Rantau dilorek dengan betul [1m]	**3**	
(c)			
(i)	(44,21) [1m] Ganti mana-mana titik di dalam rantau berlorek dalam persamaan $80x + 120y$ (1m) [1m] 6,040		
(ii)	$35 \leq y \leq 55$ [1m]	**4**	
			10

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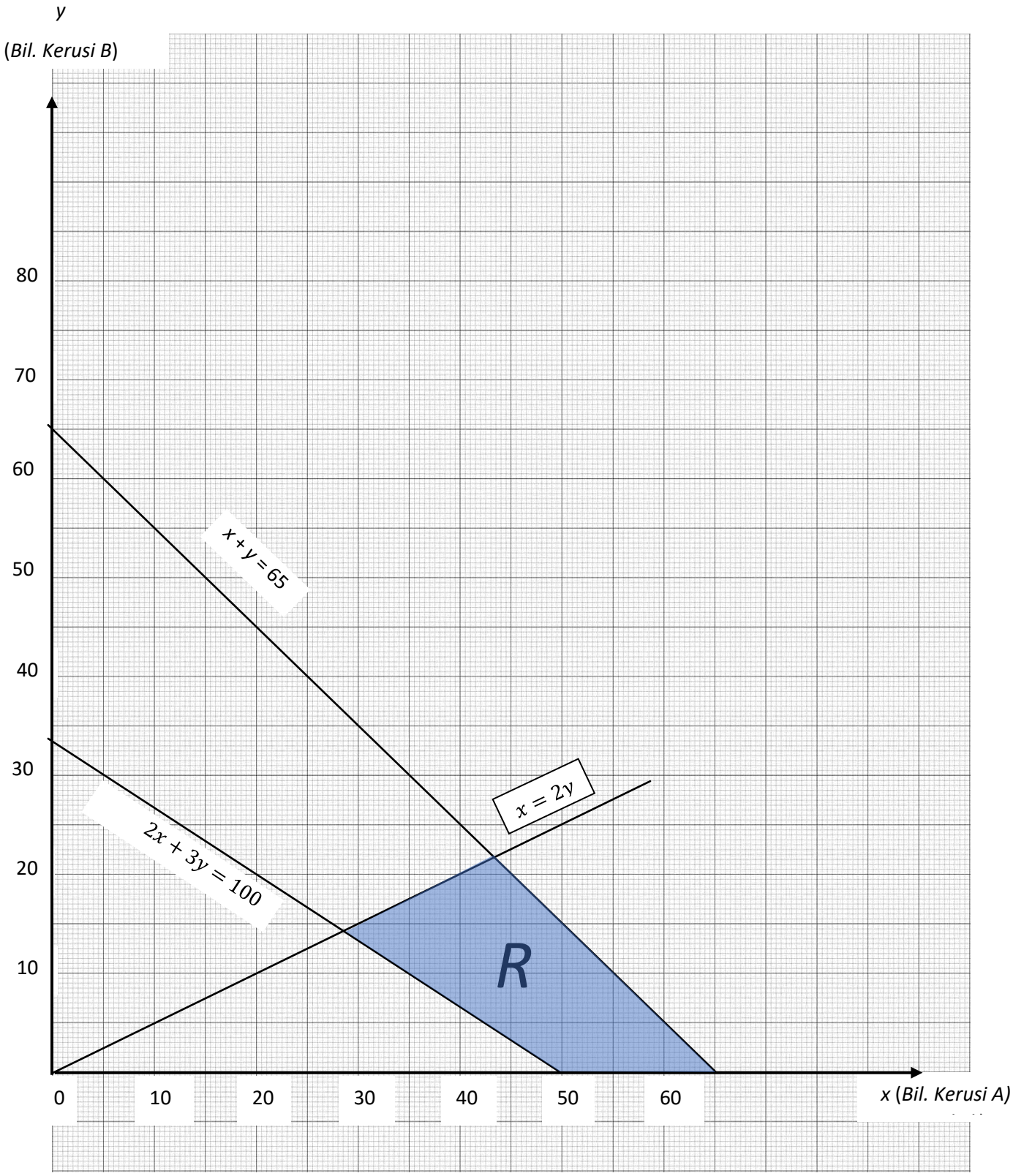
Graf soalan **14**(*b*)



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No.	Peraturan Permarkahan	Markah	Jumlah Markah
15			
(a)	$w = 26$ atau $z = 107.5$ atau $x = 0.5$ [1m] $\frac{y}{1.8} \times 100 = 107.5$ (1m) $y = 1.94$ [1m]	**3**	
(b)	Guna $\frac{26(102.86)+47(108)+2(100)+25(107.5)}{26+47+2+25}$ (1m) 106.38 [1m]	**2**	
(c)	$5.50 \times 140\%$ (1m) RM 7.70 [1m]	**2**	
(d)	$7.70 \times 106.38\% = 8.19$ [1m]	**1**	
(e)	$5.50 \times 118\% = 6.49$ (1m) $6.49 \times 140\% = 9.09$ [1m] Dan Tidak munasabah	**2**	**10**

PERATURAN PERMARKAHAN TAMAT

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