

SULIT

**PROGRAM GEMPUR KECEMERLANGAN
SIJIL PELAJARAN MALAYSIA 2026
NEGERI PERLIS**

**SIJIL PELAJARAN MALAYSIA 2026
MATEMATIK TAMBAHAN
Kertas 1
Peraturan Pemarkahan
Ogos**

3472/1(PP)

UNTUK KEGUNAAN PEMERIKSA SAHAJA

Peraturan pemarkahan ini mengandungi 16 halaman bercetak

No.	Peraturan Pemarkahan	Markah	Jumlah markah
1			
(a)	$Sudut POR = 120^\circ$ 1m $120^\circ \times \frac{\pi}{180}$ 1m $= 2.095 \text{ rad}$ 1m	3	
(b)	$s = (8)(2.095)$ $s = 16.76 \text{ cm}$ 1m Perimeter Kawasan Berlorek $8 + 8 + 16.76$ 1m $= 32.76 \text{ cm}$ 1m	3	6
 SERTAI TELEGRAM @exercise_students			

No.	Peraturan Pemarkahan	Markah	Jumlah markah
2	fitri		
	(a)		
	$(3 + 3^2 + 3^2 - 1)3^x$	1m	
	$20(3^x)$	1m	
	(b)		
	$(2 + \sqrt{3})(4)(x) = 20$	1m	
	$\frac{5}{(2+\sqrt{3})} \times \frac{2-\sqrt{3}}{2-\sqrt{3}}$	1m	5
	$10 - 5\sqrt{3}$	1m	

No.	Peraturan Pemarkahan	Markah	Jumlah markah
3	$x + y + z = 49\,000$	1m	
	$0.04x + 0.055y + 0.06z = 2600$	1m	
	$x = 4y$	1m	
	Hapus 1 pembolehubah	1m	
	Hapus 2 pembolehubah	1m	
	$x = 16\,000$	1m	
	$y = 4000$	1m	
	$z = 29000$	1m	
		8	8

No.	Peraturan Pemarkahan	Markah	Jumlah markah
4			
(a)	$\frac{y}{x} = -2 + \frac{8}{x}$ $Y = \frac{y}{x}, \quad X = \frac{1}{x}$	1m 1m, 1m	3
b)	$p = 8$	1m	1
			4

[Lihat halaman sebelah

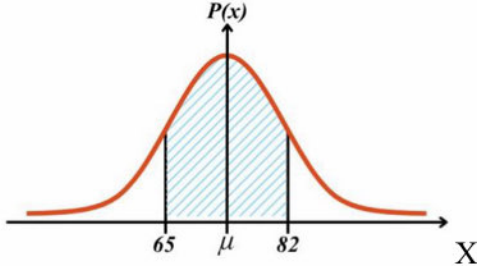
SULIT



No.	Peraturan Pemarkahan	Markah	Jumlah markah
5			
(a)	Beza $x^3 - 3x + 5$ dan samakan dengan 0 $3x^2 - 3 = 0$ 1m $x = -1, x = 1$ 1m Bezakan $3x^2 - 3$ $\frac{d^2y}{dx^2} = 6x$ 1m		
(b)	Gantikan $x = 1$ atau $x = -1$ ke dalam $\frac{d^2y}{dx^2}$ $6(1)$ atau $6(-1)$ 1m $y = 7$ 1m $(-1, 7)$ dan titik maksimum 1m	6	6

No.	Peraturan Pemarkahan	Markah	Jumlah markah
6			
(a)	$4 \int_0^3 f(x)dx - 3 \int_0^3 g(x)dx$	1m	
	-18	1m	
		2	
(b)	$3 \int_0^3 g(x)dx - \int_0^3 f(x)dx = \int_0^k 3x^2 dx$	1m	
	Kamirkan $3x^2$ dan gantikan $x = k$		
	$k^3 - 0^3 = 27$	1m	
	$k = 3$	1m	
		3	
			5



No.	Peraturan Pemarkahan	Markah	Jumlah markah
7	$P(65 \leq X \leq 82)$ 1m Melakar graf X  1m Cari nilai skor-Z $Z = \frac{65-70}{8} = -0.625$ atau $z = \frac{82-70}{8} = 1.5$ 1m Guna $1 - P(z > 1.5)$ & $z = 0.9332$ @ $1 - P(z > 0.625)$ & $z = 0.2660$ 1m 0.6672 1m	5	5

No.	Peraturan Pemarkahan	Markah	Jumlah markah
8			
(a)	(i) $\frac{6!}{720}$ 1m 1m (ii) ${}^3P_1 \times {}^2P_1 \times {}^4P_4$ 1m 144 1m	4	
(b)	6C_3 1m 20 1m	2	
			6

No.	Peraturan Pemarkahan	Markah	Jumlah markah
9	Cari magnitude untuk setiap pergerakan bola $ b_1 = \sqrt{(100)^2 + (10)^2} \quad @ \quad b_2 = \sqrt{(90)^2 + (-20)^2} \quad 1m$ $= 100.50 - 92.20 \quad 1m$ $8.30 \, m \quad 1m$	3	3



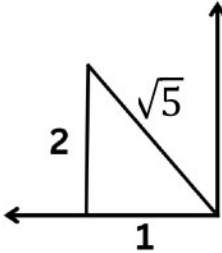
SULIT

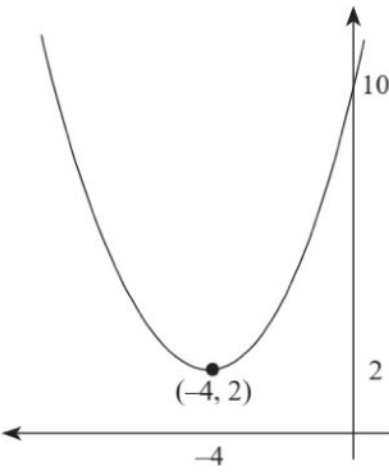
11

3472/1

No.	Peraturan Pemarkahan	Markah	Jumlah markah
10			
(a)	$y = \frac{2x-3}{x+3}$ 1m		
	$f(x) = \frac{3x+3}{2-x}$ 1m	2	
(b)	$x = 2$ 1m	1	
			3

No.	Peraturan Pemarkahan	Markah	Jumlah markah
11			
(a)	$m_{BC} \times -\frac{4}{3} = -1$ 1m $\frac{y-0}{x-3} = \frac{3}{4}$ 1m $4y = 3x - 9$ atau setara 1m	3	
(b)	$\left(0, -\frac{9}{4}\right)$ 1m $\frac{2(0)+1(x)}{2+1} = 3$ atau $\frac{2\left(-\frac{9}{4}\right)+1(y)}{2+1} = 0$ 1m $C \left(9, \frac{9}{2}\right)$ 1m	3	
			6

No.	Peraturan Pemarkahan	Markah	Jumlah markah
12			
(a)	$\sin \theta = \frac{2}{\sqrt{5}} \quad \text{atau}$  $\tan \theta = 2$ Guna $\tan 2\theta = \frac{2+\tan \theta}{1+\tan^2 \theta}$ $\frac{4}{5}$ $\sin x(2\cos x + \sqrt{3}) = 0$ $\sin \theta = 0, x = 180^\circ \quad @ \quad \cos \theta = -\frac{\sqrt{3}}{2}, x = 150^\circ, 210^\circ$ $x = 150^\circ, 180^\circ, 210^\circ$	1m 1m 1m 1m 1m 1m 1m	4 3
			7

No.	Peraturan Pemarkahan	Markah	Jumlah markah
13			
(a)	$p\left[x^2 + \frac{4}{p}x + \left(\frac{\frac{4}{p}}{2}\right)^2 - \left(\frac{\frac{4}{p}}{2}\right)^2 + \frac{q}{p}\right]$ $p\left(x + \frac{2}{p}\right)^2 - \frac{4p}{p^2} + \frac{pq}{p}$ $p\left(x + \frac{2}{p}\right)^2 + \frac{pq-4}{p}$	1m 1m 1m	3
(b)	$-\frac{2}{p} = -4 \quad \text{dan} \quad \frac{pq-4}{p} = 2$ $p = \frac{1}{2} \quad \text{dan} \quad q = 10$	1m 1m	2
(c)	 - Bentuk graf kuadratik minimum 1m - Titik minimum (-4, 2) 1m - Pintasany =10 1m	3	8

No.	Peraturan Pemarkahan	Markah	Jumlah markah
14			
(a)	$\frac{dy}{dx} = 5 + 2x$ 1m Ganti $x = 4$ ke dalam $\frac{dy}{dx}$ 1m 13 1m	3	
(b)	$\delta x = 0.01$ 1m Guna $\delta y = \frac{dy}{dx} \times \delta x$ 1m 13×0.01 0.13 1m	3	
(c)	Guna $\frac{dy}{dt} = \frac{dy}{dx} \times \frac{dx}{dt}$ 1m 13×0.4 5.2 1m	2	
			8

SULIT

**PROGRAM GEMPUR KECEMERLANGAN
SIJIL PELAJARAN MALAYSIA 2026
NEGERI PERLIS**

**SIJIL PELAJARAN MALAYSIA 2026
MATEMATIK TAMBAHAN
Kertas 2
Peraturan Pemarkahan
OGOS**

3472/2(PP)

UNTUK KEGUNAAN PEMERIKSA SAHAJA

Peraturan pemarkahan ini mengandungi 18 halaman bercetak

No.	Peraturan Permarkahan	Markah	Jumlah Markah
1			
(a)	$5a + b = 21 @ 3a + b = 3 @ \frac{36}{c-21} = -4$ 1m $2a = 18 \text{ \& } b = -24$ 1m $a = 9$ 1m $c = 12$ 1m	4	
(b)	$f(x) = 9x - 24$ atau $g(x) = \frac{36}{12-x}$ 1m $gf(x) = \frac{36}{12-(9x-24)}$ 1m $\frac{36}{36-9x} @ \frac{4}{4-x}$ 1m $\frac{36}{36-9x} = x @ \frac{4}{4-x} = x$ 1m $x = 2$ 1m	5	9



No.	Peraturan Permarkahan	Markah	Jumlah Markah
2	$\frac{(\sec x + \tan x) - (\sec x - \tan x)}{\sec^2 x - \tan^2 x} \quad 1\text{m}$		
(a)	<u>dan</u> guna $\sec^2 x = 1 + \tan^2 x$		
	$2\tan x \quad 1\text{m}$	2	
(b)			
(c)	Bentuk graf tangen 1m 1 kalaan $0 \leq x \leq 2\pi$ 1m Modulus 1m $y = \frac{x}{\pi}$ <u>dan</u> lukis garis lurus 1m Bilangan penyelesaian =4 1m	3	
		2	
			7

No.	Peraturan Permarkahan	Markah	Jumlah Markah
3			
(a)	$B 40^\circ \times \frac{\pi}{180}$ $= 0.6981 \text{ rad}$ $s = (11)(0.6981)$ $s = 42.24 \text{ cm}$	1m 1m	
(b)	$\frac{1}{2} \times 11^2 \times 0.6981$ 42.24 cm^2	1m 1m	
(c)	Isipadu tembikai 42.42×8 339.36 cm^3	1m 1m	
		3 2 2	7



No.	Peraturan Permarkahan	Markah	Jumlah Markah
4	$y = x - 2 \quad \dots\dots(1)$ $y = x^2 - 8x + 12 \quad \dots\dots(2)$ Gantikan (1) ke dalam (2) : <i>Substitute (1) into (2) :</i> $x - 2 = x^2 - 8x + 12$ $x^2 - 9x + 14 = 0$ $(x - 7)(x - 2) = 0$ $x = 7$ atau / or $x = 2$ Gantikan nilai – nilai x ke dalam (1): <i>Substitute the values of x into (1):</i> Apabila / When $x = 7$ atau / or Apabila / When $x = 2$ $y = 7 - 2 \qquad y = 2 - 2$ $y = 5 \qquad y = 0$ Maka, R(2,0) dan S(7,5). <i>Hence, R(2,0) and S(7,5).</i>	6	6

No.	Peraturan Permarkahan	Markah	Jumlah Markah
5			
(a)	$x + 17 - 50 = 25 + y - (x + 17)$ <i>atau setara</i> 1m $y = 2x - 41$ 1m	2	
(b)	$d = 7$ 1m $T_{21} = a + (21 - 1)(7) = 155$ 1m $a = 15$ 1m	3	
			5

No.	Peraturan Permarkahan	Markah	Jumlah Markah
6 (a)	$2^n 3^n (2 \times 2 \times 3)^m = 2^{3n-m} 3^{3n-2m}$ 1m $2^{2m+n} 3^{n+m} = 2^{3n-m} 3^{3n-2m}$ $2m + n = 3n - m$ atau $n + m = 3n - 2m$ 1m $3m = 2n$ 1m $\frac{m}{n} = \frac{2}{3}$ $m:n = 2:3$ 1m	4	
(b)	$y = mx + 3$ $7 = m(1 + \sqrt{5}) + 3$ $m = \frac{4}{1+\sqrt{5}} \times \frac{1-\sqrt{5}}{1-\sqrt{5}}$ 1m $-1 + \sqrt{5}$ 1m	2	
(c)	$\log_3 h - 3 \log_{27} k = 1$ $\log_3 h - 3 \frac{\log_3 k}{\log_3 27} = 1$ 1m $\log_3 h - \frac{3 \log_3 k}{3} = 1$ $\log_3 h - \log_3 k = 1$ $\log_3 \frac{h}{k} = 1$ 1m $h = 3k$ 1m	3	9

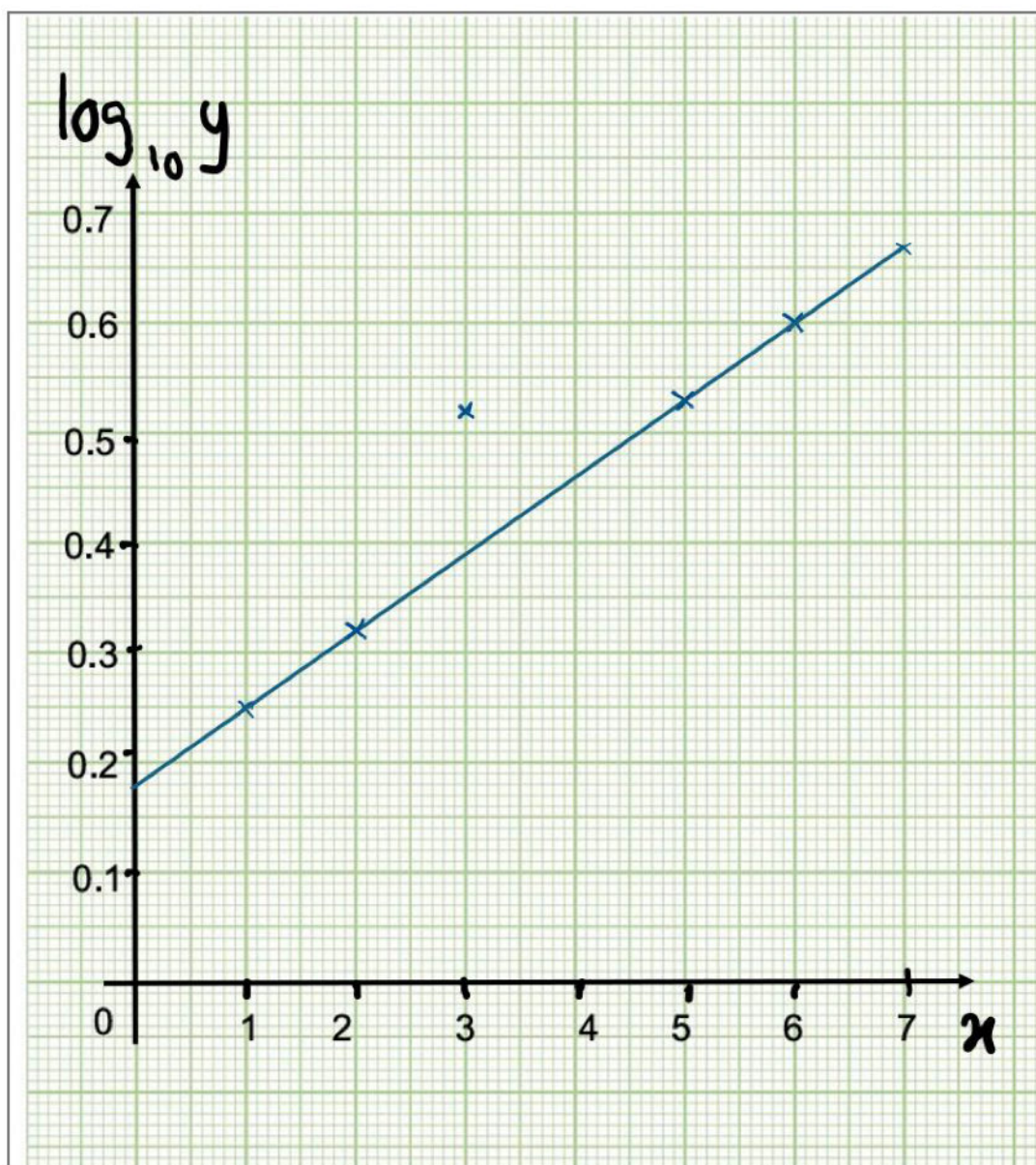


No.	Peraturan Permarkahan	Markah	Jumlah Markah
7	Guna Hukum Segitiga untuk OS atau QP		
(a)	$(i) \quad \overrightarrow{OS} = 6\underline{x} + 2\underline{y}$ $(ii) \quad \overrightarrow{QP} = -\overrightarrow{OQ} + \overrightarrow{OP} \text{ atau } \overrightarrow{QP} = \overrightarrow{QO} + \overrightarrow{OP}$ $\overrightarrow{QP} = 6\underline{x} - 8\underline{y}$	3	
(b)	$(i) \quad \begin{aligned} \overrightarrow{OR} &= m(6\underline{x} + 2\underline{y}) \\ &= 6m\underline{x} + 2m\underline{y} \end{aligned}$ $(ii) \quad \begin{aligned} \overrightarrow{OR} &= \overrightarrow{OQ} + \overrightarrow{QR} \\ &= 8\underline{y} + n(6\underline{x} - 8\underline{y}) \\ &= 8\underline{y} + 6n\underline{x} - 8n\underline{y} \\ &= 6n\underline{x} + (8 - 8n)\underline{y} \end{aligned}$	2	
		2	
			7

No.	Peraturan Permarkahan	Markah	Jumlah Markah							
8										
(a)	<table border="1"><tr><td>$\log_{10} y$</td><td>0.25</td><td>0.32</td><td>0.52</td><td>0.53</td><td>0.60</td><td>0.67</td></tr></table> 1m	$\log_{10} y$	0.25	0.32	0.52	0.53	0.60	0.67	1	
$\log_{10} y$	0.25	0.32	0.52	0.53	0.60	0.67				
(b)	1 titik di plot betul 1m 6 titik di plot betul 1m Tiada 0.7 pada paksi $\log_{10} y$ 0 markah Line best fit 1m	3								
(c)	$\log_{10} y = 3x \log_{10} q + \log_{10} p$ 1m $0.17 \leq \log_{10} p \leq 0.18$ atau $3\log_{10} q = \frac{0.6-0.18}{6-0}$ (atau setara) 1m $1.479 \leq p \leq 1.549$ 1m $1.057 \leq q \leq 1.054$ 1m $0.38 \leq \log_{10} y \leq 0.40$ 1m $2.399 \leq y \leq 2.512$ 1m	6								
			10							



Graf soalan 8(b)





No.	Peraturan Permarkahan	Markah	Jumlah Markah
9			
(a)	$2PA = PB$ 1m $2\sqrt{(x-0)^2 + (y-1)^2} = \sqrt{(x-0)^2 + (y-(-2))^2}$ 1m $x^2 + y^2 - 4y = 0$ (Tertunjuk) 1m Ganti (-2,2) ke dalam $x^2 + y^2 - 4y = 0$ $(-2)^2 + 2^2 - 4(2)$ dan Ya 1m	4	
(b)	$\frac{y-1}{x-0} = \frac{1-2}{0-(-2)}$ atau setara 1m $2y + x = 2$ atau setara 1m	2	
(c)	$(2-2y)^2 + y^2 - 4y = 0$ atau setara 1m $D\left(\frac{6}{5}, \frac{2}{5}\right)$ 1m	2	
(d)	Guna $\frac{1}{2} () - () $ 1m $\frac{8}{5} unit^2$ 1m	2	
			10

No.	Peraturan Permarkahan	Markah	Jumlah Markah
10			
(a)	$4y + 2 = y^2 + 6$ 1m $y = 2$ Maka, $R = (10, 2)$ 1m	2	
(b)	$\int_0^2 (y^2 + 6) dy - \frac{1}{2} (2 + 10) \times 2$ 1m 1m $= \left[\frac{y^3}{3} + 6y \right] - 12$ 1m $= \left[\frac{2^3}{3} - 6(2) \right] - \left[\frac{0^3}{3} - 6(0) \right] - 12$ 1m $\frac{8}{3} \text{ unit}$ 1m	5	
(c)	$V = \pi \left[\frac{x^2}{2} - 6x \right]$ 1m $\pi \left[\left(\frac{8^2}{2} - 6(8) \right) - \left(\frac{6^2}{2} - 6(6) \right) \right]$ 1m 2π 1m	3	
			10

No.	Peraturan Permarkahan	Markah	Jumlah Markah
11			
(a)			
(i)	$x \times \frac{3}{10} = 180$ 1m 600 1m	2	
(ii)	${}^7C_0 \left(\frac{3}{10}\right)^0 \left(\frac{7}{10}\right)^7 + {}^7C_1 \left(\frac{3}{10}\right)^1 \left(\frac{7}{10}\right)^6 + {}^7C_2 \left(\frac{3}{10}\right)^2 \left(\frac{7}{10}\right)^5$ 2m 0.6472 1m	3	
(b)			
(i)	$2.25 = \frac{16.5-12}{\sigma}$ 1m $\sigma = 2$ 1m	2	
(ii)	0.566 @ 0.567 1m $\frac{k-12}{2} = -0.567 @ -0.566$ 1m $k = 10.87$ 1m	3	
			10

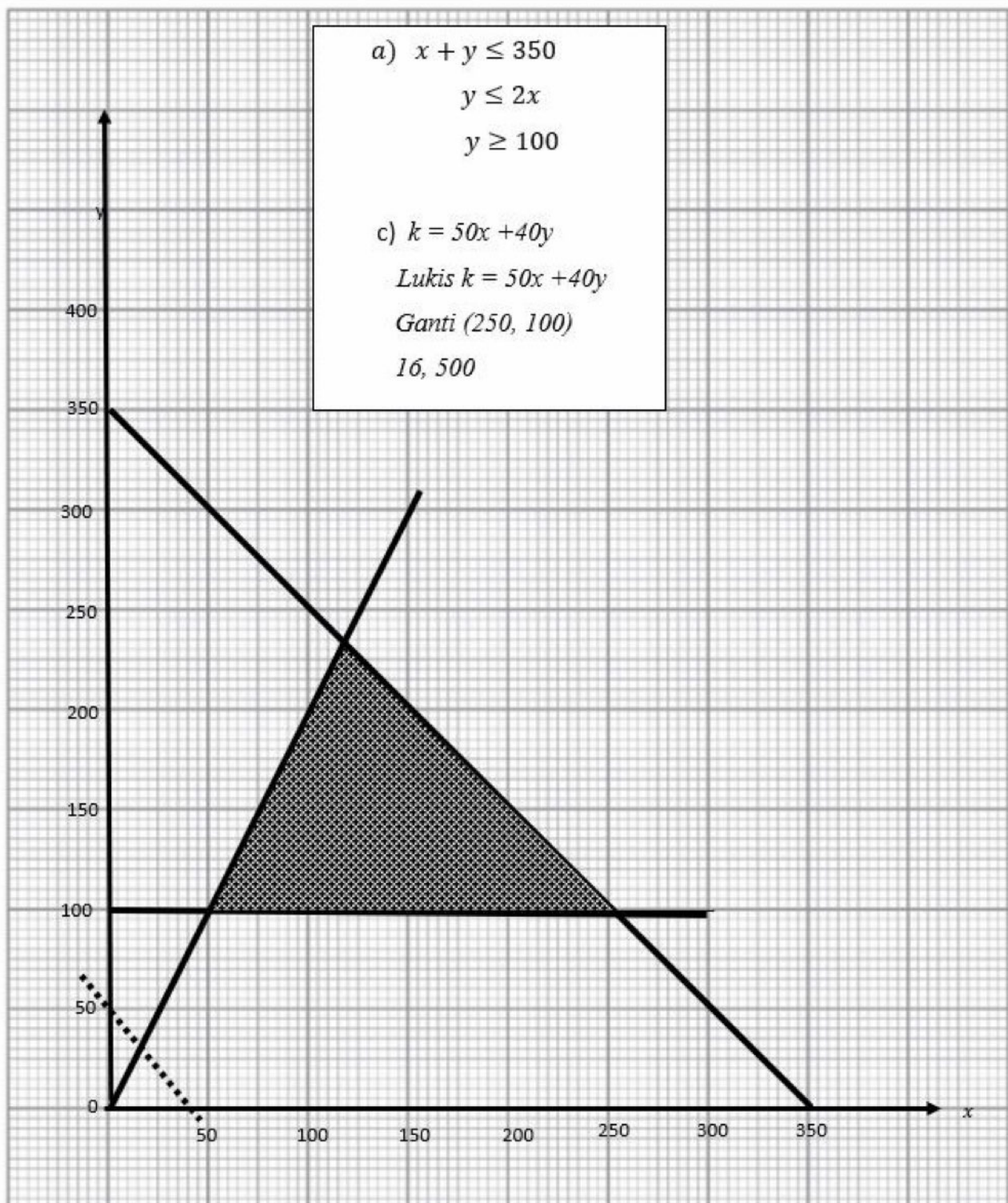
No.	Peraturan Permarkahan	Markah	Jumlah Markah
12			
(a)	$CD^2 = 12^2 + 8^2 - 2(12)(8)\cos 36$ 1m $CD = 7.257$ 1m	2	
(b)	$\frac{\sin \theta}{8} = \frac{\sin 36}{7.257}$ 1m $\sin \theta = 0.6480$ $\theta = 40.39^\circ$ 1m	2	
(c)	$ACD = 180 - 25 - 139.61$ 1m $\frac{AD}{\sin 15.39} = \frac{7.257}{\sin 25}$ 1m $AD = \frac{7.257 \sin 15.39}{\sin 25}$ 4.557 1m	3	
(d)	$AB = 4.577 + 12 = 16.557$ 1m $luas \Delta ABC = \frac{1}{2} \times 16.557 \times 8 \times \sin 36$ 1m 38.93 1m	3	
			10



No.	Peraturan Permarkahan	Markah	Jumlah Markah
13			
(a)	$s = 3t^3 - 6t^2 - 5t$ $v = \frac{ds}{dt} = 9t^2 - 12t - 5$ $= 9(0)^2 - 12(0) - 5$ $= -5$	3	
(b)	$a = \frac{dv}{dt} = 18t + 2$ $= 18(0) + 2$ $= 2$	2	
(c)	$v = \frac{ds}{dt} = 9t^2 - 12t - 5 = 0$ $(3t - 5)(3t + 1) = 0$ $t = \frac{5}{3}, t = -\frac{1}{3},$ $\therefore t = \frac{5}{3}$	5	
			10

No.	Peraturan Permarkahan	Markah	Jumlah Markah
14			
(a)	$x + y \leq 350$ 1m $y \leq 2x$ 1m $y \geq 100$ 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)	$k = 50x + 40y$ 1m <i>Lukis $k = 50x + 40y$</i> 1m <i>Ganti (250, 100)</i> 1m <i>16, 500</i> 1m	4	
			10

Graf soalan 14(b)



No.	Peraturan Permarkahan	Markah	Jumlah Markah
15			
(a)	$x = \frac{7.50}{6.00} \times 100 \text{ atau } \frac{y}{4.00} \times 100 = 150$ $\text{Atau } \frac{7.70}{z} \times 100 = 140 \quad 1\text{m}$ $x = 125 \quad 1\text{m} \quad y = \text{RM}6.00 \quad z = \text{RM } 5.50 \quad 1\text{m}$	3	
(b)	$I = \frac{125(48) + 150(24) + 125(16) + 140(12)}{48 + 24 + 16 + 12} \quad 2\text{m}$ $132.80 \quad 1\text{m}$	3	
(c)			
(i)	$\frac{x}{55.50} \times 100 = 105 \quad 1\text{m}$ $x = \text{RM } 79.68 \quad 1\text{m}$	2	
(ii)	$\frac{132.80 \times 115}{100} \quad 1\text{m}$ $I = 152.72 \quad 1\text{m}$	2	
			10

PERATURAN PERMARKAHAN TAMAT