

SULIT
3472/1
Matematik Tambahan
2024



**MAJLIS PENGETUA SEKOLAH MENENGAH MALAYSIA
CAWANGAN NEGERI SEMBILAN DARUL KHUSUS**

**PROGRAM PENINGKATAN AKADEMIK TINGKATAN 5
SEKOLAH-SEKOLAH MENENGAH NEGERI SEMBILAN 2024**

**PERATURAN PERMARKAHAN
MATEMATIK TAMBAHAN KERTAS 1**

Soalan		Skema Pemarkahan	Markah
1	(a)	$\sqrt{\left(\frac{\sqrt{3}}{2}\right)^2 + \left(-\frac{1}{2}\right)^2}$ atau $\sqrt{(\sqrt{3})^2 + (-1)^2}$	K1
		Ya, sebab magnitud vektor = 1.	N1
	(b)	$\begin{pmatrix} 3 \\ 8 \end{pmatrix} + \begin{pmatrix} p \\ q \end{pmatrix} = \begin{pmatrix} 8 \\ 4 \end{pmatrix}$	K1
		$\begin{pmatrix} p \\ q \end{pmatrix} = \begin{pmatrix} 5 \\ -4 \end{pmatrix}$ atau $3+p=8$ atau $8+q=4$	K1
		$p = 5$ dan $q = -4$	N1
			5
2	(a)	$gh(x) = -4(2x-1) + 2$	K1
		$gh(x) = -8x + 6$	N1
	(b)	$-8\left(\frac{x}{2}\right) + 6 = 2$	K1
		$x = 1$	N1
			4
3	(a)	$(-64) + (n-1)(7) < 0$ ATAU $-64, -57, -50, -43, -36, -29, -22, -15, -8, -1$	K1
		10	N1
	(b)	$\frac{3}{2}(10)$ atau $n_{\text{positif}} = 15$	K1
		$\frac{15}{2}[2(6) + (15-1)(7)]$	K1
		825	N1
			5

$$-4\sqrt{x} = -10$$

$$\sqrt{x} = -$$

Soalan		Skema Pemarkahan	Markah
4	(a)	$4x - 2(2)\sqrt{x} + 1 = 4x - 9$	K1
		$x = \frac{25}{4}$	N1
	(b)	$4 = x^k$ atau $x = \sqrt[k]{4}$ atau $\frac{\log_4 4}{\log_4 x}$ atau $\log_4 x = \frac{1}{k}$	K1
		$\log_4 (4^{\frac{1}{k}})^{\frac{1}{3}}$ atau $\frac{1}{3} \log_4 x$	K1
		$\frac{1}{3k}$	N1
			5
5	(a)	$(y-4)\log 7 = 2x\log 3$	K1
		$y = 1.129x + 4$	N1
	(b)	$2^x \times 2^5$ atau $2^x \times 2^3$ atau $2^x \times 2^2$	K1
		$2^x(36)$	K1
		36 ialah gandaan bagi 4 atau setara	N1
			5
6	(a)	$y - x^2 = 4x + 4$	P1
		$Y = y - x^2$	N1
	(b)	$\frac{5-4}{h-0} = 4$ atau $5 = 4(h) + 4$	K1
		$h = \frac{1}{4}$	N1
			4
7	(a)	$\frac{dy}{dx} = 3px^2 + 2qx$	K1
		$3p(1)^2 + 2q(1) = 5$	K1
		$q = \frac{5-3p}{2}$	N1
	(b)	$\frac{dy}{du} = -\frac{5}{2}u^{-6}$ atau $\frac{du}{dx} = -3$	K1
		$\frac{dy}{dx} = -\frac{5}{2}u^{-6} \times -3$	K1
		$\frac{dy}{dx} = \frac{15}{2(6-3x)^6}$	N1
			6

Soalan		Skema Pemarkahan	Markah
10	(a)	$\int_0^2 2g(x) dx + \int_0^2 1 dx$ atau $[x]$	K1
		$\frac{7}{8(3-x)^2}$	K1
		$\frac{7}{8(3-2)^2} - \frac{7}{8(3-0)^2} + 2 - 0$	K1
		$\frac{25}{9}$	N1
	(b)	$\int_{4p}^{4p} f(x) dx = 2p - 1$	K1
		$2p - 1 = 0$	K1
		$\frac{1}{2}$	N1
			7
11	(a)	$3 \times 2 \times 2 \times 1 \times 1 \times 1 \times 3$ atau setara	K1
		$3 \times 2 \times 2 \times 1 \times 1 \times 1 \times 3 \times 5$ atau setara	K1
		180	N1
	(b)	${}^8C_3 \times {}^nC_2$ atau ${}^8C_4 \times {}^nC_1$ atau ${}^8C_5 \times {}^nC_0$	K1
		$\frac{n(n-1)(n-2)!}{(n-2)!2!}$	K1
		$\frac{56n(n-1)(n-2)!}{(n-2)!2!} + 70n + 56 = 1316$	K1
		6	N1
			7
12	(a)(i)	$1 - k - m$	P1
	(ii)	${}^3C_3 p^3 q^0 = \frac{1}{64}$	K1
		$p = \frac{1}{4}$ atau 0.25	N1
	(b)	$P\left(Z \geq \frac{8-15}{\sigma}\right) = 0.6844$ atau $z = (-)0.48$	K1
		$\frac{8-15}{\sigma} = -0.48$	K1
		$\sigma = 14.58$	N1
			6

Soalan		Skema Pemarkahan	Markah
13	(a)	$\left(\frac{8-(-2)}{-4-6}\right)m_2 = -1$ atau setara	K1
		$\frac{y-8}{x-(-4)} = 1$ atau setara	K1
		$y = x + 12$	N1
	(b)	$\frac{1}{2}[[8x + (-4)(-2) + 6y] - [(-4)y + (8)(6) + (-2)x]]$	K1
		$ 5x + 5y - 20 $	N1
	(c)	$ 5x + 5(x + 12) - 20 = 60$	K1
		$10x + 40 = -60$	K1
		$A(-10, 2)$	N1
			8
14	(a)	$x^2 + \left(\frac{b}{a}\right)x + \left(\frac{\frac{b}{a}}{2}\right)^2 - \left(\frac{\frac{b}{a}}{2}\right)^2 + \frac{c}{a}$	K1
		$\left(x + \frac{b}{2a}\right)^2 - \left(\frac{b}{2a}\right)^2 + \frac{c}{a}$	K1
		$x = \frac{-b}{2a} + \frac{\sqrt{b^2 - 4ac}}{2a}$	N1
	(b)	$\frac{-(-2k) \pm \sqrt{(-2k)^2 - 4(1)(2-k)}}{2(1)}$	K1
		$k \pm \sqrt{k^2 + k - 2}$	N1
	(c)	$(k+2)(k-1) \geq 0$	K1
		$(-3+2)(-3-1)$ $\leftarrow$ $+$ $k \leq -2$ $(0+2)(0-1)$ $\leftarrow$ $-$ $-2 \leq k \leq 1$ $(2+2)(2-1)$ $\leftarrow$ $+$ $k \geq 1$ atau kaedah setara yang menggunakan garis nombor	K1
		$k \leq -2, k \geq 1$	N1
			8

Soalan		Skema Pemarkahan	Markah
15	(a)	$\frac{a^2}{a^2} + \frac{b^2}{a^2} = \frac{c^2}{a^2}$, c ialah hipotenus segi tiga bersudut tegak.	K1
		$\tan^2 \theta + 1 = \sec^2 \theta$	N1
	(b)	$(2 \sin x - 1)(\sin x + 1) = 0$	K1
		sudut rujukan 30°	K1
		$30^\circ, 150^\circ$ dan 270°	N1
	(c)	$\cos x \cos y + q = \frac{p}{q}$ atau $\left(\frac{p}{q} - q \right) - \sin x \sin y$	K1
	(i)	$\frac{p}{q} - q$	N1
	(ii)	$\frac{p}{q} - 2q$	N1
			8

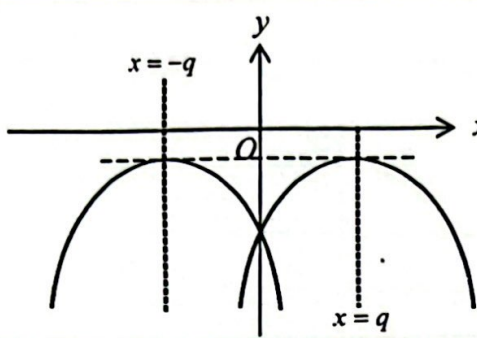
SULIT
3472/2
Matematik Tambahan
2024

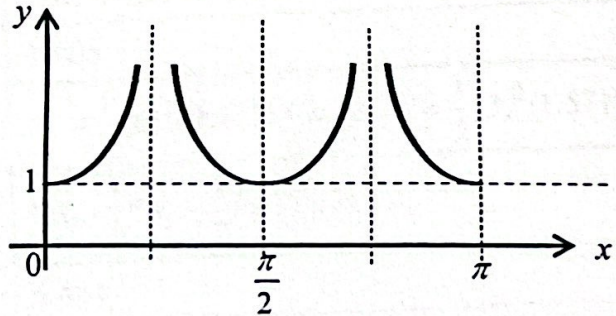


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CAWANGAN NEGERI SEMBILAN DARUL KHUSUS**

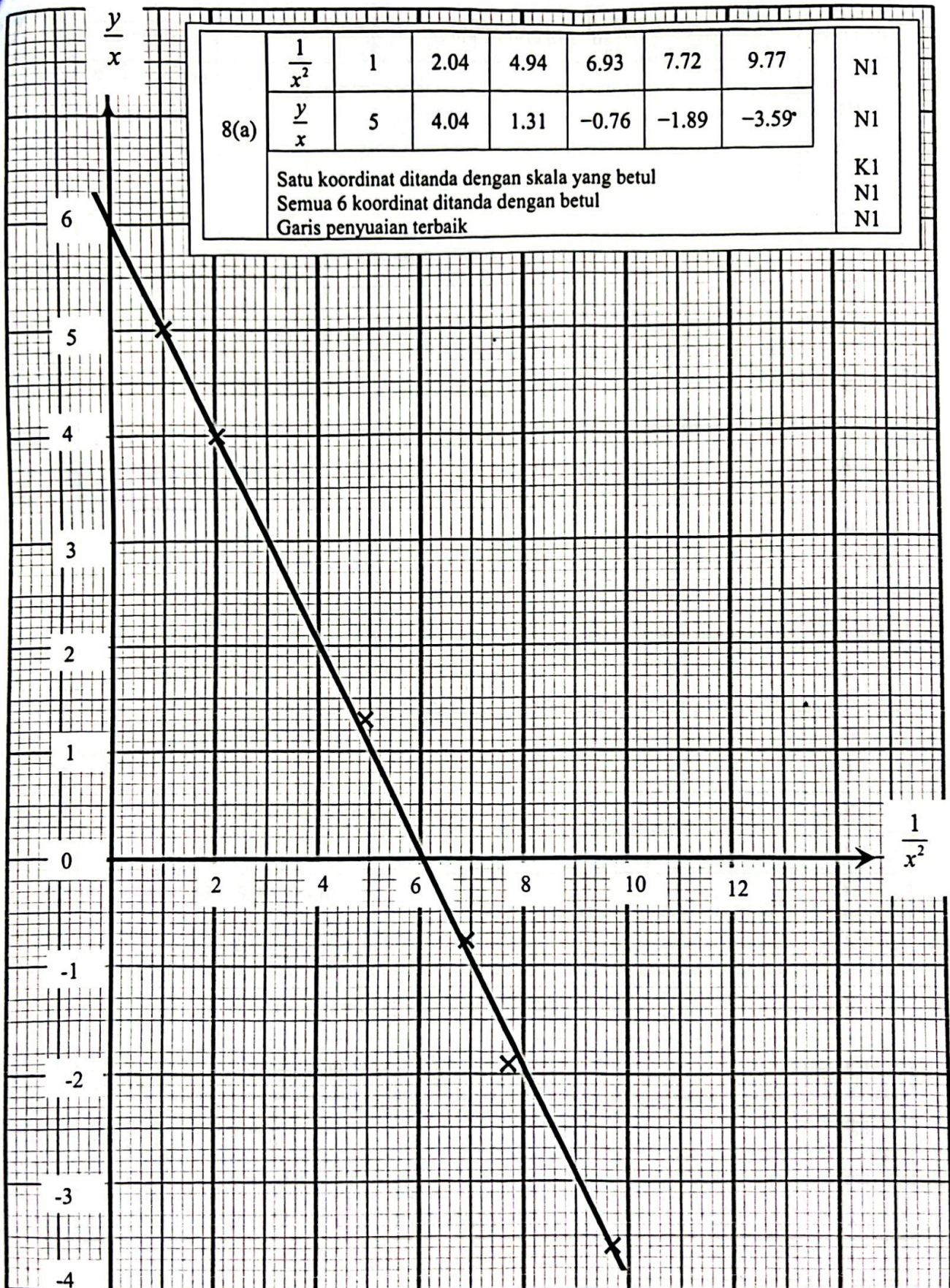
**PROGRAM PENINGKATAN AKADEMIK TINGKATAN 5
SEKOLAH-SEKOLAH MENENGAH NEGERI SEMBILAN 2024**

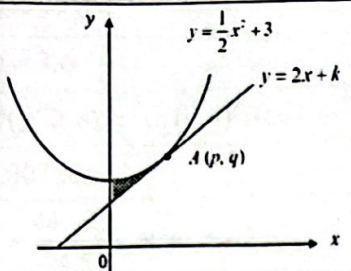
**PERATURAN PERMARKAHAN
MATEMATIK TAMBAHAN KERTAS 2**

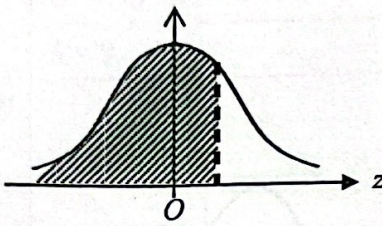
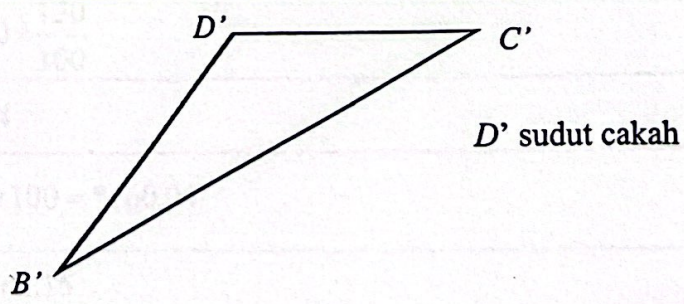
Soalan		Skema Pemarkahan	Markah
1	(a) (i)	$(2q)^2 - 4(-1)(-5q+1) < 0$	K1
		$p > \frac{q^2+1}{5}$	N1
	(ii)	 Bentuk graf Pantulan paksi-y DAN simetri di $x = -q$	P1 P1
	(b)	a dalam julat $-2 < a < 0$ dilihat	K1
		$h(x) = ax^2 + 3$	N1
			6
2	(a)	$\frac{-10(1)+22(3)}{1+3} = h$ atau $\frac{k(1)+12(3)}{1+3} = 10$	K1
		$h = 14$, $k = 4$	N1N1
	(b)	$m_1 = \frac{12-4}{22-(-10)}$ atau setara DAN $m_1 m_2 = -1$	K1
		$y - 4 = -4(x - (-10))$	K1
		$y = -4x - 36$	N1
	(c)	$\sqrt{(x-22)^2 + (y-12)^2} = 13$	K1
		$x^2 + y^2 - 44x - 24y + 459 = 0$	N1
			8
3		$x = 2y - 4$ atau setara	P1
		$4(2y-4)^2 + 3y^2 - 2y(2y-4) = 20$ atau setara	K1
		$y = \frac{-(-56) \pm \sqrt{(-56)^2 - 4(15)(44)}}{2(15)}$ atau setara	K1
		$y = 2.609, 1.124$	N1
		$x = 1.218, -1.752$	N1
		$(1.218, 2.609) \text{ \& } (-1.752, 1.124)$	N1
			6

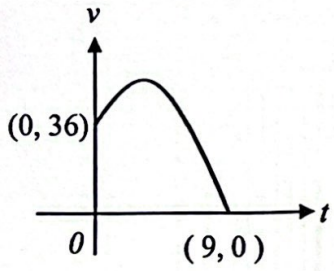
Soalan		Skema Pemarkahan	Markah
4	(a)(i)	$\frac{2\beta+2}{\beta+1} = \frac{\beta+1}{\beta-2}$ DAN selesaikan β	K1
		$\beta = 5$	N1
	(ii)	$r = \frac{5+1}{5-2}$ atau $r = 2$	K1
		Hasil tambah ketakterhinggaan tidak wujud kerana $r > 1$.	N1
	(b)(i)	$\frac{x(1-0.95^8)}{1-0.95} = 201.95$	K1
		30	N1
	(ii)	$30(0.95)^{n-1} > 18$	K1
		$n = 10$	N1
		40	N1
			9
5	(a)	$\frac{2\sin x \cos x}{2\cos^2 x - 1}$	K1
		$\tan 2x$	N1
	(b)		
		Graf $\tan x$ (paksi menggunakan pembaris)	P1
		Graf $ \tan 2x $ dan label 0 dan π	P1
		Graf $ \tan 2x + 1$ tepat dan label 1	P1
	(c)(i)	$y = kx$	P1
	(ii)	$k < \frac{1}{\pi}$	P1
			7

Soalan		Skema Pemarkahan	Markah
6	(a)	$\delta x = 0.06$ atau $\frac{dA}{dx} = 4x - \frac{540}{x^2}$	K1
		$\delta A = \left[4(3) - \frac{540}{(3)^2} \right] \times 0.06$	K1
		$\delta A = -2.88$	N1
		$\frac{2.88}{198} \times 100$	K1
		1.455 %	N1
	(b)	$4x - \frac{540}{x^2} = 0$	K1
		5.1299 atau 5.130	N1
			7
7	(a)	1.047 rad	N1
	(b)(i)	$6(0.5235)$ atau $3(1.571)$ atau $3 - (6 - \sqrt{27})$	K1
		$*BC + *DC + *BD$	K1
		10.05	N1
	(ii)	$A_1 = \frac{1}{2}(6)^2(0.5235)$ atau $A_2 = \frac{1}{2}(3)^2(1.571)$	K1
		$*A_2 - \left(*A_1 - \frac{1}{2}(\sqrt{27})(3) \right)$	K1
		5.441	N1
			7
8	(a)	Rujuk muka surat 5	
	(b)	$\frac{y}{x} = -\left(\frac{r}{p}\right)\left(\frac{1}{x^2}\right) + p$	P1
	(i)	$p = 6$	N1
	(ii)	$\frac{6 - (-2.9)}{0 - 9} = -\frac{r}{*6}$	K1
		$r = 5.93 \pm 0.05$	N1
	(iii)	$y = 1$	N1
			10



Soalan	Skema Pemarkahan	Markah
9	(a) 	N1
	(b) (i) $\frac{dy}{dx} = x$ atau $x = 2$	K1
	$A(2, 5)$, $k = 1$	N1, N1
	(ii) $\left[\frac{1}{2} \left(\frac{x^3}{3} \right) + 3x \right]$ atau $\left[\frac{2x^2}{2} + x \right]$	K1
	$\left[\frac{1}{2} \left(\frac{2^3}{3} \right) + 3(2) - 0 \right] - \left[\frac{2(2)^2}{2} + 2 - 0 \right]$	K1
	$\frac{4}{3}$	N1
	(c) $\pi \left[\frac{2y^2}{2} - 6y \right]$	K1
	$\pi \left[\left(\frac{2(*5)^2}{2} - 6(*5) \right) - \left(\frac{2(3)^2}{2} - 6(3) \right) \right]$	K1
	4π	N1
		10
10	(a) $\overline{AB} + \overline{BC}$ atau $\overline{BA} + \overline{AD}$	K1
	(i) $\overline{AC} = 2x + 5y$	N1
	(ii) $\overline{BD} = 3x - 6y$	N1
	(b) $\overline{BE} = \frac{4}{3}x - \frac{8}{3}y$	K1
	$* \left(\frac{4}{3}x - \frac{8}{3} \right) y = \lambda(3x - 6x)$ atau setara	K1
	$3\lambda = \frac{4}{3}$ atau $-6\lambda = -\frac{8}{3}$	K1
	$\lambda = \frac{4}{9}$	K1
	$h = 4$ dan $k = 5$	N1
	(c) $9^2 + 12^2$ atau $[3(3)]^2 + [-6(2)]^2$	K1
	$15 = 15$. AB berserenjang dengan AD .	N1
		10

Soalan		Skema Pemarkahan	Markah
11	(a)(i)	$\mu = 9 \times 0.4$	K1
		$\mu = 3.6$	N1
	(ii)	$P(X \geq 8) = {}^9C_8(0.4)^8(0.6)^1 + {}^9C_9(0.4)^9(0.6)^0$	K1
		0.003801	N1
	(b)(i)	$z = \frac{44-35}{4.5}$ atau $z = 2$	K1
		0.0228	N1
	(ii)		P1
		$P(Z < \frac{k-35}{4.5}) = 0.56$ atau $z = 0.151$	K1
		$\frac{k-35}{4.5} = 0.151$	K1
		$k = 35.68$	N1
			10
12	(a)(i)	$BD^2 = 12.8^2 + 5.6^2 - 2(12.8)(5.6) \cos 42^\circ$	K1
		9.416	N1
	(ii)	$\frac{\sin \angle B}{3.9} = \frac{\sin 115^\circ}{*9.416}$	K1
		$\angle B = 22.05^\circ$	N1
	(iii)	$\frac{1}{2}(12.8)(5.6) \sin 42^\circ$	K1
		23.98	N1
	(iv)	$\frac{1}{2} \times 12.8 \times t = *23.98$	K1
		3.747	N1
	(b)(i)		K1
	(ii)	$\angle C'D'B' = 137.05^\circ$	N1
			10

Soalan		Skema Pemarkahan	Markah
13	(a) (i)	$a = 0$ dan $t = \frac{5}{2}$	P1
		$v_{maks} = \frac{-2t^2}{2} + 5t + c$ dan $-\left(\frac{5}{2}\right)^2 + 5\left(\frac{5}{2}\right) + 36$	K1
		42.25	N1
	(ii)	$t^2 - 5t - 36 = 0$	P1
		$(t+4)(t-9) = 0$	K1
		$k = 9$	N1
	(b)	 Bentuk graf (0,36) dan (9,0)	P1 P1
		$\left[-\frac{(9)^3}{3} + \frac{5(9)^2}{2} + 36(9) \right] - 0$	K1
		283.5	N1
			10
14	(a)	$\frac{2.16}{1.80} \times 100, \frac{2.80}{y} \times 100 = 140$	K1
		$x = 120, y = 2$	N1, N1
	(b)	$\frac{*120(4) + 130(3) + 140(1) + 114m}{4 + 3 + 1 + m} = 123.80$	K1
		$1010 + 114m = 123.80(8+m)$	K1
		$m = 2$	N1
	(c)(i)	$123.80 \times \frac{130}{100}$	K1
		160.94	N1
	(ii)	$\frac{3.46}{P_{2010}} \times 100 = *160.94$	K1
		$P_{2010} = 2.15$	N1
			10

Soalan	Skema Pemarkahan	Markah
15	(a) $50x + 75y \leq 6000$ atau setara	N1
	$50x + 60y \geq 3000$ atau setara	N1
	$\frac{x}{y} \geq \frac{1}{2}$ atau $y \leq 2x$	N1
	(b) Satu garis lurus betul	K1
	Ketiga-tiga betul	K1
	Rantau berlorek R	N1
	(c) $k = 70x + 120y$	K1
	Garis lurus fungsi objektif yang selari dengan $70x + 120y = 840$	K1
	$70(30) + 120(60)$	K1
	9300	N1
		10

