

SULIT

3472/2

Matematik Tambahan

2025

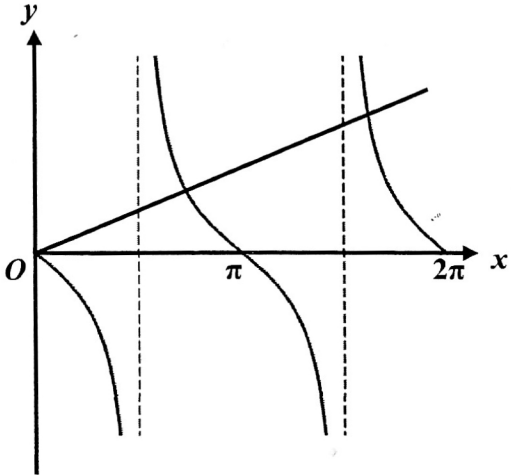


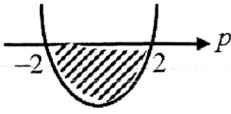
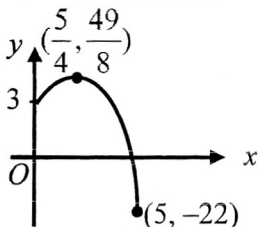
MAJLIS PENGETUA SEKOLAH MENENGAH MALAYSIA
CAWANGAN NEGERI SEMBILAN DARUL KHUSUS

**PROGRAM PENINGKATAN AKADEMIK TINGKATAN 5
SEKOLAH-SEKOLAH MENENGAH NEGERI SEMBILAN 2025**

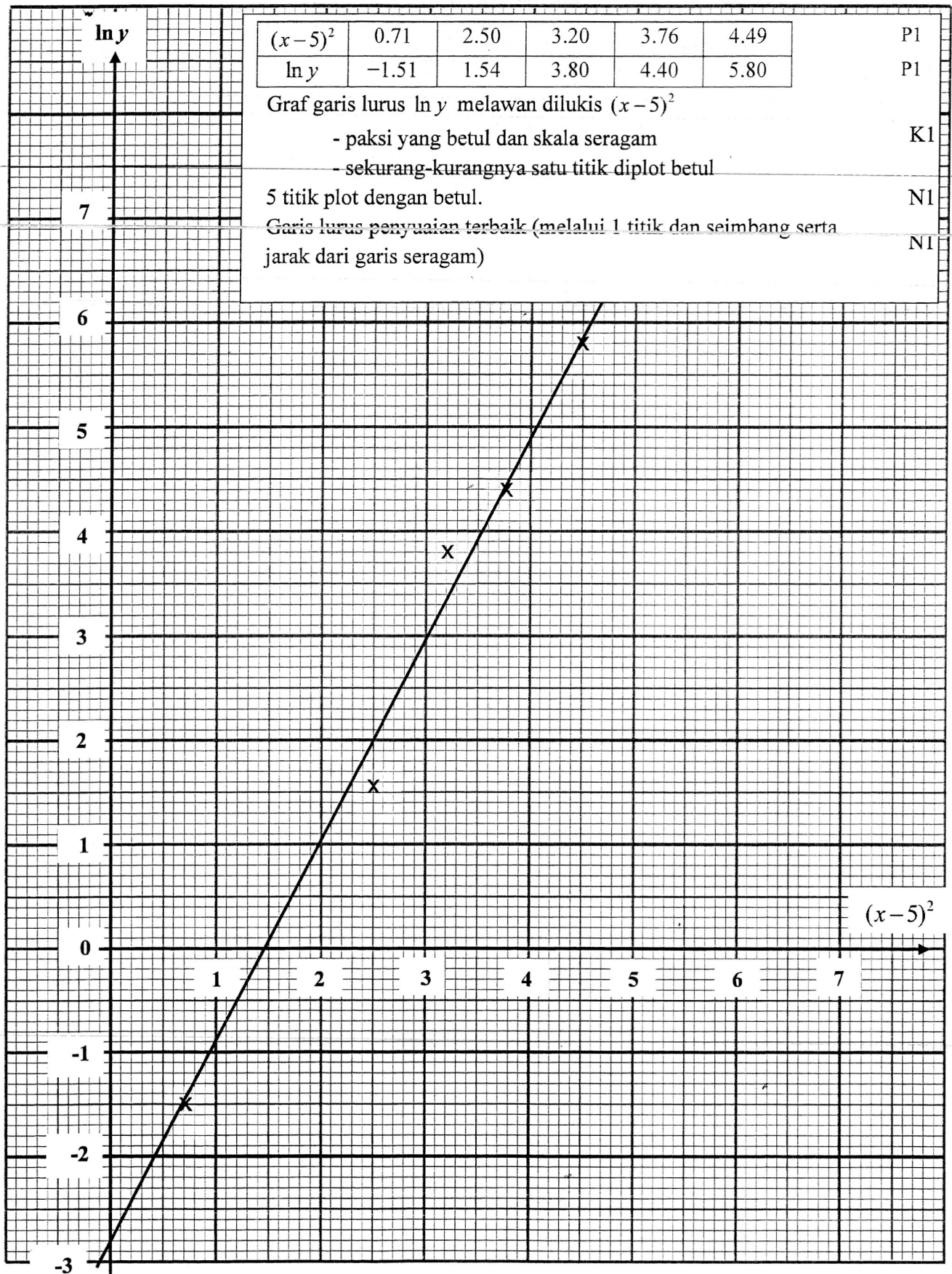
**PERATURAN PERMARKAHAN
MATEMATIK TAMBAHAN KERTAS 2**

Soalan		Skema Pemarkahan	Markah
1		Membentuk mana-mana satu persamaan $x + y + z = 25000$ $\frac{4.5}{100}x + \frac{5.2}{100}y + \frac{3}{100}z = 1125$ $y - z = 3000$ Ketiga-tiga persamaan betul	P1 P1
		Hapus anu pertama dengan penggantian @ penghapusan Hapus x : $0.007y - 0.015z = 0$ atau setara Hapus y : $0.045x + 0.082z = 969$ @ $x + 2z = 22000$ @ $y = z + 3000$ Hapus z : $x + 2y = 28000$ @ $0.045x + 0.082z = 1215$	K1
		Hapus anu kedua dengan penggantian @ penghapusan	K1
		Arif = RM16750 , Bijak = RM5625 , Cerdik = RM2625	N1N1N1
			7
2	(a)	$\overrightarrow{AD} = \overrightarrow{AO} + \overrightarrow{OD}$ atau $\overrightarrow{CE} = \overrightarrow{CO} + \overrightarrow{OE}$ atau $\overrightarrow{AX} = \overrightarrow{AC} + \overrightarrow{CX}$	P1
		$\overrightarrow{AX} = p\vec{x} + 2p\vec{y}$	N1
		$\overrightarrow{CX} = -q\vec{y} + \frac{3}{2}q\vec{x}$	K1
		$\overrightarrow{AX} = \left(-1 + \frac{3}{2}q\right)\vec{x} + (1-q)\vec{y}$	N1
	(b)	Banding pekali $\vec{x}$ dan pekali $\vec{y}$ $p = -1 + \frac{3}{2}q$ dan $2p = 1 - q$	K1
		persamaan serentak	K1
		$p = \frac{1}{8}$	N1
		$q = \frac{3}{4}$	N1
			8

Soalan		Skema Pemarkahan	Markah
3	(a)	$5 + (n-1)3$	K1
		$T_n = 3n + 2$	N1
	(b)	$3n^2 + 7n - 3000 \leq 0$ atau pengiraan untuk mendapat julat n	K1
		$n = 30$	N1
			4
4	(a)	$\frac{-2(2 \sin x \cos x)}{(2 \cos^2 x - 1) + 1} @ \frac{-2 \sin x}{\cos x}$	K1
		$-2 \tan x$	N1
	(b)	 Bentuk graf $\tan x$ P1 2 kitaran P1 graf $y = -2 \tan x$ yang betul P1 $y = \frac{3x}{2\pi}$ P1	
		Lukis garis lurus $y = \frac{3x}{2\pi}$	K1
		Bilangan penyelesaian = 3	N1
			8

Soalan		Skema Pemarkahan	Markah
5	(a)	$x^2 + (x+p)^2 - 2 = 0$	K1
		$(2p)^2 - 4(2)(p^2 - 2) > 0$	K1
		$(p+2)(p-2) < 0$ dan 	K1
		$-2 < p < 2$	N1
	(b)	$f(x) = -2 \left[x^2 - \frac{5}{2}x + \left(\frac{-\frac{5}{2}}{2} \right)^2 - \left(\frac{-\frac{5}{2}}{2} \right)^2 - \frac{3}{2} \right]$	K1
		$f(x) = -2(x - \frac{5}{4})^2 + \frac{49}{8}$	N1
		Lakar graf parabola maksimum label titik-titik $(\frac{5}{4}, \frac{49}{8})$, pintasan-y = 3 dan (5, -22) pada kedudukan yang tepat 	P1 P1
			8
6	(a)	$(r-2)^2 + 4^2 = r^2$	K1
		$r = 5$	N1
	(b) (i)	106.26° atau 1.855 rad (dilihat)	K1
		$8 + 5(*1.855)$	K1
		17.275	N1
	(ii)	$\frac{1}{2}(5)^2(*1.855) @ \frac{1}{2} \times 8 \times 3 @ \frac{1}{2}(5)(5)\sin\left(*1.855 \times \frac{180}{3.142}\right)$	K1
		$\frac{1}{2}(5)^2(*1.855) - \frac{1}{2} \times 8 \times 3$ atau	K1
		$\frac{1}{2}(5)^2(*1.855) - \frac{1}{2}(5)(5)\sin\left(*1.855 \times \frac{180}{3.142}\right)$ atau setara	
		11.19	N1
			8

Soalan		Skema Pemarkahan	Markah
7	(a)	$\frac{dv}{dh} = 144\pi$	P1
		$\frac{dv}{dt} = 144\pi \times \frac{1}{720}$	K1
		$\frac{dv}{dt} = \frac{\pi}{5}$	N1
	(b) (i)	$\frac{-0.001}{h} \times 100 = -0.0125$	K1
		8	N1
	(ii)	$\delta V = 144\pi \times -0.001$ atau $V = \pi(12)^2 \times 8$ atau $(\pi(12)^2 \times 8) + (144\pi \times (-0.001))$	K1
		1151.856 π	N1
			7
8	(a)	Lihat lampiran muka surat	
	(b)	$\ln y = \ln a + b(x-5)^2$	P1
		$\ln a = *c$ ATAU $b = *m$ ATAU $\sqrt{*x} + 5$ (Nota: *c ialah pintasan-y grafnya, *m ialah kecerunan grafnya, *x ialah nilai x pada paksi-x apabila $y = 4.30$.)	K1
		$a = 0.06393$ (terima $0.04979 < a < 0.08208$)	N1
		$b = 1.9351$ (terima $1.601 < b < 2.140$)	N1
		6.924	N1
			10

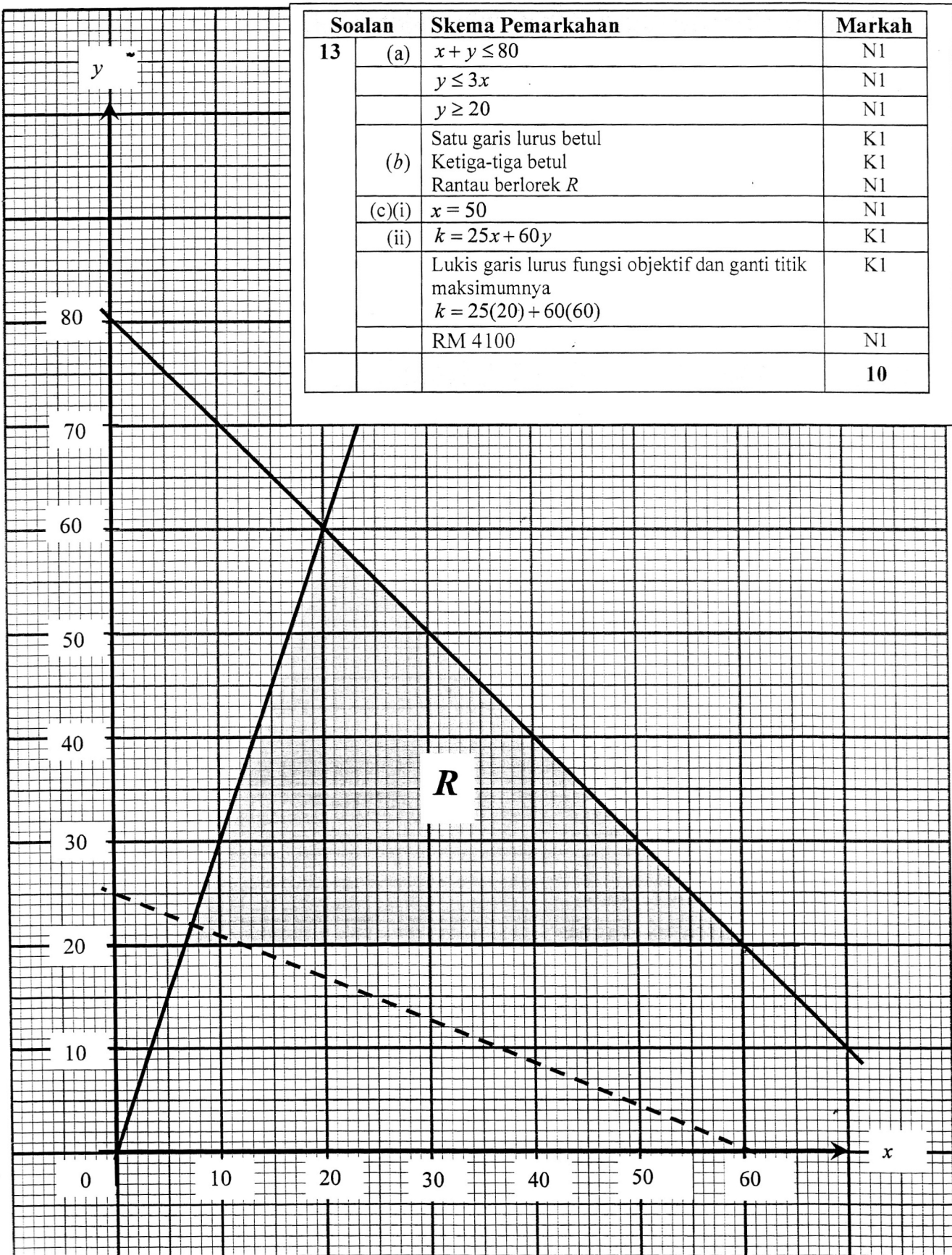


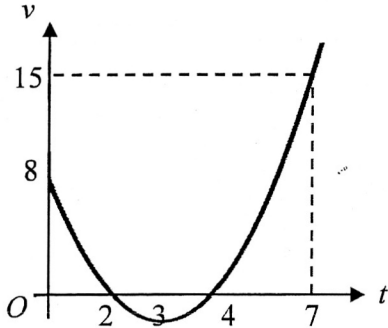
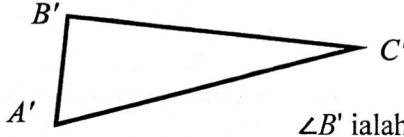
Soalan		Skema Pemarkahan	Markah
9	(a)	$5(3) + 3h = 30$ atau $k^2 = 0 + 4$	K1
		$h = 5, k = 2$	N1N1
	(b)	6	P1
		$[\frac{y^3}{3} - 4y]$ atau $[10y - \frac{5}{6}y^2]$	K1
		$[(\frac{3^3}{3} - 4(3)) - (\frac{2^3}{3} - 4(2))] + [(10(6) - \frac{5}{6}(6^2)) - (10(3) - \frac{5}{6}(3^2))]$	K1
		$\frac{59}{6}$	N1
	(c)	$[\frac{x^2}{2} + 4x]$ atau $[36x - \frac{18}{5}x^2 + \frac{3}{25}x^3]$	K1
		$\frac{1}{4}\pi[[36(5) - \frac{18}{5}(5^2) + \frac{3}{25}(5^3) - 0] - [\frac{5^2}{2} + 4(5) - 0]]$	K1
		$\frac{145}{8}\pi$	N1
			10

10	(a)(i)	${}^5C_4(0.6)^4(0.4)^1$	P1
		0.2592	N1
	(ii)	$1 - {}^nC_0(0.6)^0(0.4)^n = 0.9744$	K1
		$n \log 0.4 = \log 0.0256$	K1
		$n = 4$	N1
	(b)	0.713 @ -0.713	K1
		$-\frac{5}{\sigma} = -0.713$	K1
		$\sigma = 7.013$	N1
		$\frac{10}{7.013}$	K1
		7.7%	N1
			10

Soalan		Skema Pemarkahan	Markah
11	(a)(i)	$m_{AD} = -1$ ATAU $(6-10)^2 + (3-r)^2 = (4\sqrt{26})^2$	P1
		$\frac{* \left(\frac{3+r}{2} \right) - (-1)}{8-2} = *(-1)$ ATAU $3-r=20$ dan $3r=-20$	K1
		$r = -17$	N1
	(ii)	$\frac{1}{2} \left[[2(3) + 6(*-17) + 10(-1)] - [(-1)(6) + 3(10) + (*-17)(2)] \right]$	K1
		48	N1
	(b)(i)	$\left(\frac{y-3}{x-6} \right) \left(\frac{y-*(-7)}{x-*8} \right) = -1$ @ atau setara $\sqrt{(x-*7)^2 + (y-*(-2))^2} = \sqrt{26}$	K1
		$x^2 + y^2 - 14x + 4y + 27 = 0$	N1
	(ii)	Ganti $y = 3 - 2x$ ke dalam persamaan lokus di (b)(i).	K1
		Guna $b^2 - 4ac$ atau $(-34)^2 - 4(5)(48)$	K1
		$196 > 0$ & AC bukan tangen kepada bulatan	N1
			10
12	(a)	$140 = \frac{35}{x} \times 100$	K1
		$x = 25$	N1
	(b)	111.15 @ 110 @ 144.9 @ 126	K1
		$\bar{I} = \frac{111.15(35) + 110(15) + 144.9(40) + 126(10)}{35 + 15 + 40 + 10}$	K1
		125.96	N1
	(c)	$125.96 = \frac{x}{250} \times 100$	K1
		$x = 314.90$	
		$\frac{10000}{314.90} = 31$	N1
	(d)	$\bar{I} = \frac{117(35) + 110(15) + 126(40) + 140(10)}{35 + 15 + 40 + 10}$	K1
		121.85	
		$x = \frac{(121.85)(120)}{100} = 146.22$	K1, N1
			10

Soalan	Skema Pemarkahan	Markah
13	(a) $x + y \leq 80$	N1
	$y \leq 3x$	N1
	$y \geq 20$	N1
	Satu garis lurus betul	K1
	Ketiga-tiga betul	K1
	Rantau berlorek R	N1
	(c)(i) $x = 50$	N1
	(ii) $k = 25x + 60y$	K1
	Lukis garis lurus fungsi objektif dan ganti titik maksimumnya $k = 25(20) + 60(60)$	K1
	RM 4100	N1
		10



Soalan		Skema Pemarkahan	Markah
14	(a) (i)	$2t - 6 = 0$	K1
		$v = (3)^2 - 6(3) + 8$	K1
		-1	N1
	(ii)	$(t - 2)(t - 4) = 0$	K1
		$s = \frac{t^3}{3} - 3t^2 + 8t$	K1
		$\frac{(4)^3}{3} - 3(4)^2 + 8(4) - \left(\frac{(2)^3}{3} - 3(4)^2 + 8(4) \right)$	K1
		$\frac{4}{3}$	N1
	(b) (i)		
		Bentuk graf	P1
		Graf melalui titik 2 and 4	N1
	(ii)	$3 < t \leq 7$	N1
			10
15	(a) (i)	$AC^2 = 8.02^2 + 16.03^2 - 2(8.02)(16.03) \cos 46^\circ$	K1
		$AC = 11.94 \text{ m}$	N1
	(ii)	$\frac{16.03}{\sin A} = \frac{11.94}{\sin 46^\circ}$	K1
		$74.96^\circ, 105.04^\circ$	N1N1
	(iii)	$BE = 11.33$	P1
		$\frac{1}{2}(11.33)(11.94) \sin \theta = 18.64$	K1
		$\theta = 164^\circ$	N1
	(b) (i)	 $\angle B'$ ialah sudut cakah.	N1
	(ii)	$\angle A'B'C' = 76.08^\circ$	N1
			10