

3472/2

Matematik
Tambahan
Kertas 2
Ogos 2017
2 ½ jam

JABATAN PELAJARAN KELANTAN

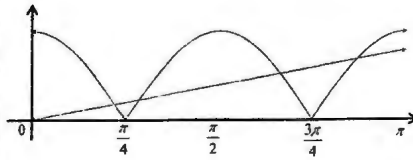
PEPERIKSAAN
PERCUBAAN SIJIL PELAJARAN MALAYSIA 2017

MATEMATIK TAMBAHAN
Kertas 2

SKIMA PEMARKAHAN

Skema Pemarkahan ini mengandungi 11 halaman bercetak

No	Solution and Mark Scheme		Sub Marks	To	
1	(a)	(i)	$\sum x = 30$	P1	5
		(ii)	$2.25 = \frac{\sum x^2}{5} - 36$ $\sum x^2 = 191.25$	K1 N1	
	(b)	(i)	$\bar{x} = (6 \times 3) + 4 = 22$	P1	
		(ii)	$\sigma^2 = 3^2 \times (1.5)^2 = 20.25$	P1	
2	(a)	(i)	$0 = p - (1 - q)^2$ $0 = p - (3 - q)^2$ $-(3 - q)^2 + (1 - q)^2 = 0$ $q = 2$ $p = 1$	P1 K1 T11 (both)	5
		(ii)	Nilai maksimum = 1	N1	
	(b)	$f(x) = 1 - (x + 2)^2$	P1		

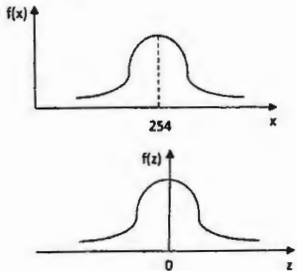
3	$7xy = 28$ atau setara $7x + 2y + \pi\left(\frac{7x}{2}\right) = 26$ $\pi\left(\frac{7x}{2}\right)$ di lihat K1 $2\left(\frac{4}{x}\right) + 18x = 26$ $(9x-4)(x-1) = 0$ $x = 1, y = 4$	PI K1 K1 K1 K1 NI, NI	7
4	<p>(a) $= \frac{(2\sin x \cos x) \cos x - \sin x}{\sin x}$ $= \cos 2x$</p> <p>(b)</p>  <p>Memperoleh persamaan $y = \frac{x}{4}$ atau setara.</p>	K1 NI Graf kos 2x PI Modulus PI Julat $0 \leq x \leq \pi$ PI Garis lurus L1 Bil Peny NI K1	8

5 (a)	$\vec{MN} = \vec{ON} - \vec{OM} \text{ atau } \vec{OB} = \vec{OA} + \vec{AB}$ <p>(i) $\vec{MN} = 5q - 2p$</p> <p>(ii) $\vec{OB} = 8p + 10q$</p> <p>(b) $\vec{OL} = \vec{ON} - k(5q - 2p)$ $= 2kp + 5(1-k)q$</p> <p>$\vec{OL} = \vec{OB} - k(8p + 10q)$ $= (8-8k)p + (10-10k)q$</p> <p>$2h = 8 - 8k \text{ atau } 5(1-k) = 2(1-k)5$</p> <p>$k = \frac{5}{6} \text{ dan } h = \frac{2}{3}$</p>	K1 NI NI K1 (Cari kedua-dua OL) NI (Kedua- dua OL) K1 (menyamakan pekali dan nolnai pers. serentak) NI NI	8
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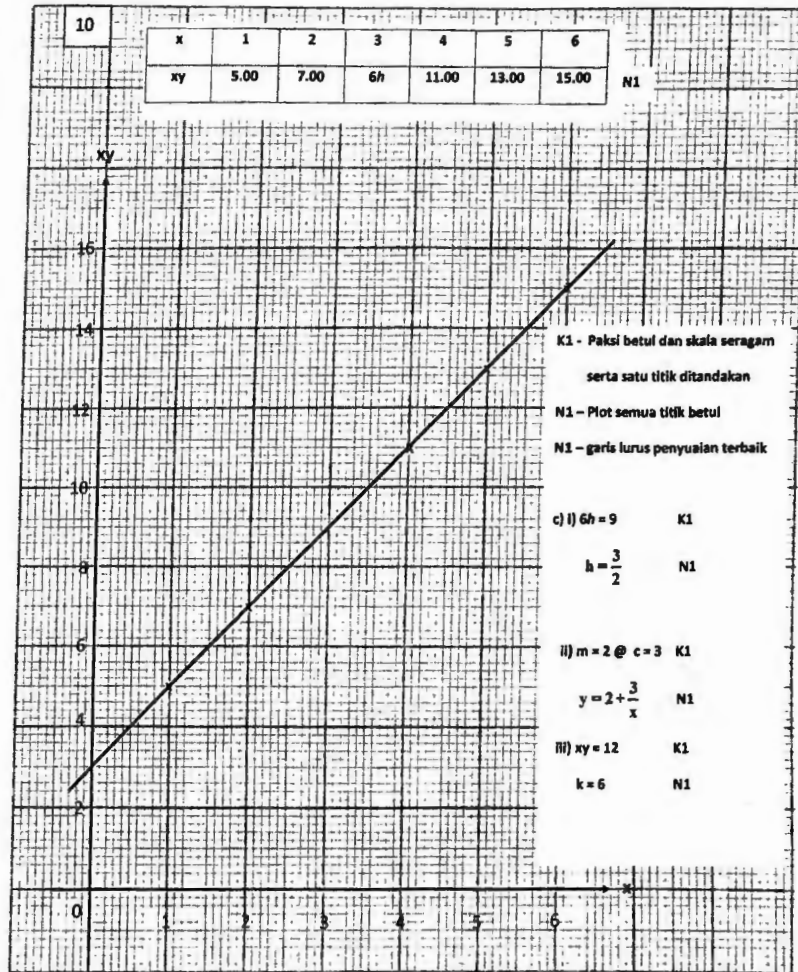
6 (a)	$4(7-x) + 4(2x) + 4y = 56$ $x + y = 7$	K1 N1	
(b) (i)	$V = (7-x) + (2x)(y)$ atau $V = (7-x) + (2x)(7-x)$ $V = 2x^2 - 28x^2 + 98x$	K1 N1	
(ii)	$\frac{dV}{dx} = 6x^2 - 56x + 98$ atau $6x^2 - 56x + 98 = 0$ $x = \frac{7}{3}$ atau $x = 7$ Panjang = Lebar = Tinggi = $\frac{14}{3}$	K1 N1 N1	7

7	(a) 1	PI	
(b)	5(1) @ 7(1) $2+2+5(1) @ 7(1)$ 16	K1 K1 N1	
(c)	$\frac{1}{2}(5)^2(1) - \frac{1}{2}(3)^2(1) @ \frac{1}{2}(7)^2(1) - \frac{1}{2}(5)^2(1)$ $\frac{1}{2}(5)^2(1) - \frac{1}{2}(3)^2(1) : \frac{1}{2}(7)^2(1) - \frac{1}{2}(5)^2(1)$ 2 : 3	K1 K1 N1	
(d)	$57.2884' @ 61.3558'$ $\frac{AB}{\sin 57.2884'} = \frac{10}{\sin 61.3558'}$ AB = 9.5875	K1 K1 N1	10

8 (a)	$\frac{dy}{dx} = \frac{-2}{(2(1)-1)^3}$ $\frac{k-4}{1-h} = \frac{1}{2}$ $h = -2k + 9$	K1 K1 N1	
(b)	$\frac{1}{2}(k+4)(h-1)$ $\frac{1}{2}(k+4)(-2k+8) - 4 = 3$ $k = 3$	K1 K1 N1	
(c)	$h = 3$ $\pi \left[\frac{(2x-1)^{-3}}{-24} \right]_1^3$ $\frac{-1}{24} \pi \left[\left(\frac{1}{(2(3)-1)^3} \right) - \left(\frac{1}{(2(1)-1)^3} \right) \right]$ $\frac{31}{750} \pi$	PI K1 K1 N1	10

9	(a)	(i)	$4.6 = 10p$ $p = 0.46$	K1	10
			N1		
	(ii)	$P(x \geq 2) = 1 - {}^{10}C_0 (0.46)^0 (0.54)^{10} - {}^{10}C_1 (0.46)^1 (0.54)^9$ 0.9799	K1		
			N1		
(b)	(i)			P1	10
			N1		
	(ii)	$P(x < 250) = P\left(z < \frac{250 - 254}{2.2}\right)$ $= 0.0345$ 3.45 %	K1		
			N1		

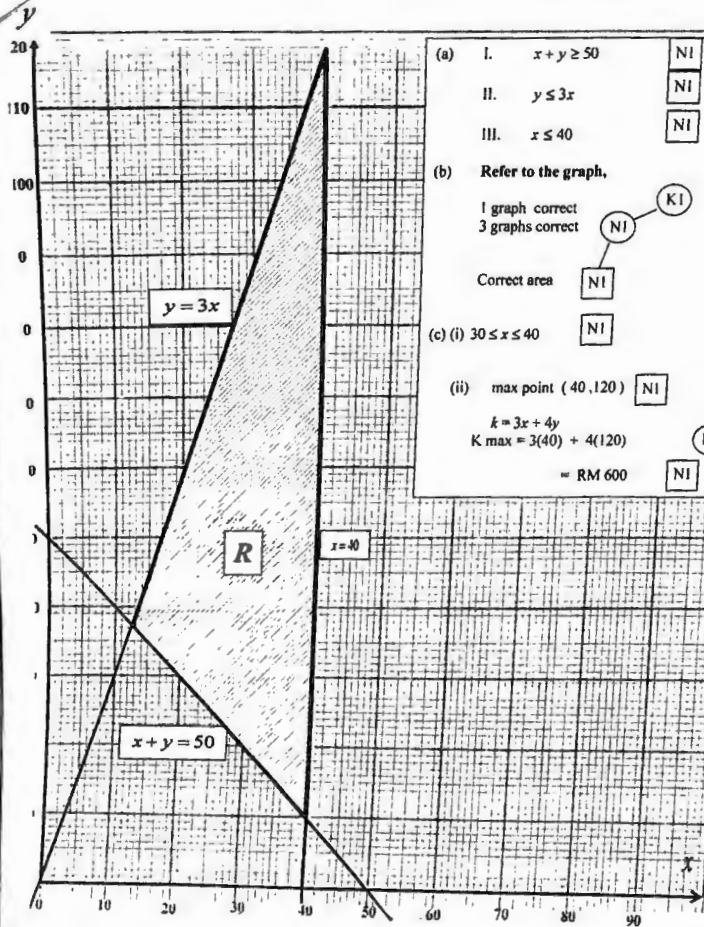
10	Rujuk lampiran	10
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11	(a)	<p>titik tengah AC = (4.5) @ $m_2 = -\frac{3}{2}$</p> $2y = -3x + 22$	K1	10
			NI	
	(b)	<p>B(0,11)</p> $\frac{x+0}{2} = 4 \text{ \& } \frac{y+11}{2} = 5$ <p>D(8,-1)</p>	P1	
			K1	
			NI	
	(c)	$\frac{1}{2} \{ (11-7+24) - (77+56-1) \}$ <p>52</p>	K1	
			NI	
	(d)	$\frac{y-3}{x-1} \text{ @ } \frac{y+1}{x-8}$ $\left(\frac{y-3}{x-1} \right) \left(\frac{y+1}{x-8} \right) = -1$ $x^2 + y^2 - 9x - 2y + 5 = 0$	K1	
			K1	
			NI	

12	(a)	$\frac{x}{9} \times 100 = 120$ $x = RM10.80$	K1	10
			NI	
	(b)	$\frac{l \times 110}{170} = 100$ $l = 154.55$ $\frac{3}{y} \times 100 = 154.55$ $y = 1.94$	K1	
			K1	
			NI	
			K1K1	
	(c)	$120 \times 2 + \frac{6}{3.5} \times 100 \times 3 + 154.55 + \frac{z}{2.40} \times 100 \times 4$ <p>(i) $\frac{\quad}{10} = 112$</p> $z = 1.27$ <p>(ii) $\frac{1.50}{x} \times 100 = 112$</p> $x = 1.34$	NI	
			K1	
			NI	

13	Dilampirkan		
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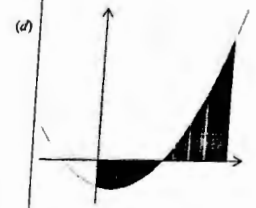


- (a) I. $x + y \geq 50$ NI
 II. $y \leq 3x$ NI
 III. $x \leq 40$ NI
- (b) Refer to the graph,
 1 graph correct NI
 3 graphs correct NI
- Correct area NI
- (c) (i) $30 \leq x \leq 40$ NI
- (ii) max point (40, 120) NI
 $k = 3x + 4y$
 $K \text{ max} = 3(40) + 4(120)$ NI
 $= \text{RM } 600$ NI

14 (a) $v = t^2 - \frac{4}{3}t - 5$
 $v = (0)^2 - \frac{4}{3}(0) - 5 = -5$

(b)

(c) $\frac{1}{3}t^3 - \frac{2}{3}t^2 - 5t = 0$
 $(t+3)(t-5) = 0$
 $t = 5$
 $a = 2t - \frac{4}{3}$
 $= 2(5) - \frac{4}{3} = \frac{26}{3}$



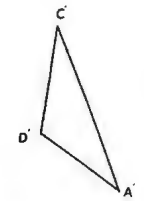
(d)

$$= \left[\frac{t^3}{3} - \frac{2}{3}t^2 - 5t \right] + \left[\frac{t^3}{3} - \frac{2}{3}t^2 - 5t \right]$$

$$= \left[\left(\frac{3^3}{3} - \frac{2}{3}(3) - 5(3) \right) - 0 \right] + \left[\left(\frac{6^3}{3} - \frac{2}{3}(6) - 5(6) \right) - \left(\frac{3^3}{3} - \frac{2}{3}(3) - 5(3) \right) \right]$$

$$= 42$$

K1
 K1N1
 K1
 K1
 N1
 10
 K1
 K1, K1
 N1

15 (a)	<p>(i) $B = 180 - 57 - 35 = 88$</p> $AC = \frac{6 \sin 88}{\sin 35}$ $= 10.454$ <p>(ii)</p> $\cos D = \frac{5^2 + 12^2 - 10.454^2}{2(5)(12)}$ $D = 60.15$ <p>(iii)</p> $\text{Luas} = \frac{1}{2} \times 5 \times 12 \sin 60.15 + \frac{1}{2} \times 10.454 \times 6 \sin 57$ $= 78.625$ <p>(b) (i)</p>  <p>(ii) $180 - 60.15 = 119.85$</p>	P1	K1	10
			N1	
			K1	
			N1	
			K1K1	
			N1	
			N1	
			N1	

SKIMA PEMARKAHAN TAMAT



JABATAN PENDIDIKAN NEGERI KELANTAN

PEPERIKSAAN PERCUBAAN SPM 2017

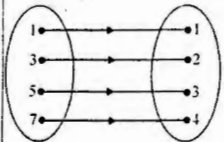
ADDITIONAL MATHEMATICS

Paper 1

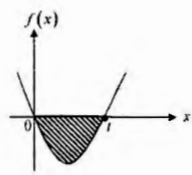
MARKING SCHEME

No.	Solution and Mark Scheme	Sub Marks	Total Marks
1(a)	3	1	2
(b)	$q = -2, p = 2$	1	
2(a)	$y = 2$	1	2
(b)	$w = 18$	1	
3(a)	1	1	3
(b)	$-2i0$ $B1 : \frac{10}{2}[2(-3) + 9(-4)]$ OR $\frac{15}{2}[2(17) + 14(-4)]$ or $\frac{5}{2}[2(17) + 4(-4)]$	2	
4(a)	$2, 1, \frac{1}{2}$	1	3
(b)	4 $B1 : \frac{2}{1 - \frac{1}{2}}$	2	
5	$x = 8$ $B1 : x + 1 = 3^2$	2	2
6	$\frac{2}{p} + \frac{1}{2q}$ $B2 : \frac{2 \log_4 x}{\log_4 4} + \frac{\log_4 y}{\log_4 4}$ $B1 : \log_4 x^2 + \log_4 y$	3	
7	$x = -2$ $B2 : 6x + 9 = -3x - 9$ $B1 : 2^{x+3} = \frac{1}{2^2}$ or $\frac{1}{2^2}$	3	3

SULIT

8	$p=1$ and $\log_2 q=4$ B2: $p=1$ or $\log_2 q=4$ B1: $\log_2 y=2p \log_2 x - \log_2 q$	3	3
9(a)	$\cos(90^\circ - \alpha) = t$	1	4
(b)(i)	$m=2$ and $k=1$ B1: $m=2$ or $k=1$	2	
(ii)	$0 < k < 2$	1	
10(a)	1 rad	1	4
(b)	$75 - m$ B2: $\frac{1}{2}(12)^2(1) - (m-3)$ B1: $\frac{1}{2}(12)^2(1)$	3	
11(a)	18	2	4
(b)	$B1: \lim_{n \rightarrow 9} (n+9)$ $p=2$ $B1: 5(-2)(3x-4)^{-3}(3)$	2	
12	$m=2$ $B2: 7(3) - 7(m-1) = 14$ $B1: 7x$	3	3
13(a)	$f^{-1}(x) = \frac{x+1}{2}$	1	3
(b)	 B1: 1, 2, 3, 4	2	

SULIT

14(a)	10	1	4
(b)	$x=11$ $B2: 2(x-1) = 7(2)+6$ $B1: 2(x-1)$ or $7(2)+6$	3	
15	$y = -(x-1)^2 - 2$ $B2: -3 = a(0-1)^2 - 2$ $B1: y = a(x-1)^2 - 2$	3	3
16	$p = \frac{1}{1-q}$ $B1: (2)^2 - 4p(-q+1) = 0$	2	2
17(a)	$t=6$ $B1: x(x-6) = 0$ or $2x(x-6) = 0$	2	4
(b)(i)	$f(x) > 0$		
(ii)			

18(a)		1	4
(i)			
(ii)	$\vec{QP} = -3\mathbf{i} + 6\mathbf{j}$	1	
(b)	3354 km B1: $\sqrt{1500^2 + 3000^2}$ or equivalent	2	
19(a)	$k = \frac{1}{3}$	1	3
(b)	$m = \frac{1}{2}$ B1: $1 - m = \frac{1}{3}(3m)$	2	
20	$\frac{2}{675}$ B2: $-\frac{12}{3^2} \times (-0.02)$ B1: $\frac{dy}{dx} = -12x^{-4}$ or $\partial x = -0.02$ or equivalent	3	3
21(a)	0.3383	2	4
(b)	B1: $\frac{4.5 - 4}{1.2}$ 15465 biji B1: $\frac{5000}{n} = 0.3233$ or equivalent		

22(a)	0	1	3
(b)(i)	$\frac{5}{21}$ or 0.2381	1	
(ii)	Saling Eksklusif	1	
23	$\frac{33}{2}$ or 16.5 B3: $\frac{\sum x^2}{6} - \left(\frac{1}{2}\right)^2 = \frac{5}{2}$ B2: $2^2 \times \sigma_{\text{awal}}^2 = 10$ or equivalent B1: $2(\bar{X}_{\text{awal}}) + 3 = 4$ or equivalent	4	4
24(a)	60 B1: ${}^{\circ}C_1 \times \boxed{\text{any number}}$ or $\boxed{\text{any number}} \times {}^{\circ}C_2$ or equivalent	2	4
(b)	8 cara B1: $4 \times 1 \times 1$ OR {BMM, HMM, PMM, OMM, BHH, PIHH, OHH, MHH} - At least 4 correct	2	
25(a)	$y = 2$	1	3
(b)	Cicak yang berada di Q dan 13,42 B1: $\sqrt{(14-2)^2 + (2-8)^2}$ or equivalent	2	