

3472/1  
Matematik  
Tambahan  
Kertas 2  
2 Jam  
Ogos/Sept 2018



JABATAN PENDIDIKAN NEGERI KELANTAN

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PEPERIKSAAN PERCUBAAN SPM 2018

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ADDITIONAL MATHEMATICS

Paper 2

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MARKING SCHEME

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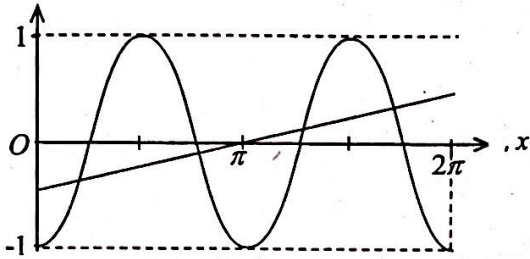
Skema Pemarkahan ini mengandungi 8 halaman bercetak

1

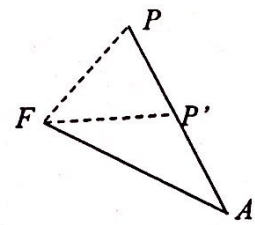


4 (a)			
(i)	4	N1	7
(ii)	0	N1	
(iii)	$\lim_{n \rightarrow 7} \left( \frac{(n+7)(n-7)}{n-7} \right)$ $= 14$	K1 N1	
(b)	$\partial y = x^2 + 2x \partial x + (\partial x)^2 + x + \partial x - x^2 - x$ $\frac{\delta y}{\delta x} = 2x + \partial x + 1$ $\frac{dy}{dx} = 2x + 1$	K1 K1 N1	
5	$\overline{EB} = \overline{EA} + \overline{AE} \text{ or } \overline{BC} = \overline{BA} + \overline{AC}$	K1	8
(a)(i)	$6\bar{x} - 7\bar{y}$	N1	
(ii)	$9\bar{y} - 6\bar{x}$	N1	
(b)(i)	$6\bar{x} - 3\bar{y} = \lambda \left( -\frac{1}{2}(-6\bar{x} + 7\bar{y}) + \frac{1}{2}\overline{AE} \right)$ $-3\bar{y} = -\frac{3}{2}\lambda\bar{y}$ $\lambda = 2$	K1 K1 N1	
(b)(ii)	$\frac{1}{2}(3)(5)$	K1	
	7 ½ atau setara	N1	

<p>6 (a)</p> <p>(b)</p> <p>(c)</p>	$\sin 37.5^\circ = \frac{26}{m}$ <p>42.7097</p> $\frac{1}{2}(42.7097)^2 \left(\frac{5}{12}\pi\right) - \frac{1}{2}(42.7097)^2 \sin 75^\circ$ <p>313.056</p> $\pi(26) + \frac{5}{12}\pi(42.7097) + 17 + 17 + 40$ <p>211.6061 cm x RM2.50</p> <p>RM5.29</p>	<p>K1</p> <p>N1</p> <p>K1K1</p> <p>N1</p> <p>K1K1</p> <p>N1</p>	<p>8</p>														
<p>7 (a)</p> <p>(b)</p>	<table border="1" data-bbox="295 739 1029 884"> <tbody> <tr> <td>x</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> </tr> <tr> <td><math>\frac{y}{x}</math></td> <td>4</td> <td>4.40</td> <td>5.0</td> <td>5.5</td> <td>6.08</td> <td>6.49</td> </tr> </tbody> </table> <p>Refer to the graph ( Rujuk lampiran 1 ) Both axes correct (at least plotting 1 point) Plotting all 6 points – correct line of the best fit - correct.</p>	x	2	3	4	5	6	7	$\frac{y}{x}$	4	4.40	5.0	5.5	6.08	6.49	<p>N1</p> <p>K1</p> <p>N1</p> <p>N1</p>	<p>10</p>
x	2	3	4	5	6	7											
$\frac{y}{x}$	4	4.40	5.0	5.5	6.08	6.49											
<p>(c)</p> <p>(i)</p> <p>(ii)</p> <p>(iii)</p>	$\frac{y}{x} = 2hx + \frac{k}{h}$ $2h = \frac{6.5 - 4}{7 - 2}$ $h = 0.25$ $\frac{k}{h} = 3$ $k = 3(0.25)$ $k = 0.75$ $\frac{y}{h} = 3.6$ $y = 3.6(1.2)$ $y = 4.32$	<p>P1</p> <p>K1</p> <p>N1</p> <p>K1</p> <p>N1</p> <p>N1</p>															

<p>8(a)</p> <p>8(b)</p> <p>8(c)</p> <p>(i)</p>	$kosek^2x - (kosek^2x - 1) - 2\sin^2x$ $1 - 2\sin^2x$ $kos2x$ <p>(shown)</p> <p>Reference angle = <math>41.41^\circ</math></p> $x = 20.70^\circ, 159.30^\circ, 200.70^\circ, 339.30^\circ$  <p>shape of cosine graph amplitud max 1, min -1 cycle</p> $y = \frac{x}{2\pi} - \frac{1}{2}$ <p>straight line on the graph No. of solutions = 4</p>	<p>K1</p> <p>N1</p> <p>K1</p> <p>N1</p> <p>P1</p> <p>P1</p> <p>P1</p> <p>K1</p> <p>N1</p> <p>N1</p>	<p>10</p>
<p>9</p> <p>(a)</p> <p>(b)</p> <p>(c)</p>	$M_{BD} = -\frac{1}{2}$ $\frac{q-3}{p-0} = -\frac{1}{2}$ $p = 6 - 2q$ $30 = 2 \begin{vmatrix} 1 & 0 & p-1 & 0 \\ 2 & 3 & q-4 & 3 \end{vmatrix}$ $\pm 30 = (-4p - 3 + q - 3q)$ $-27 = -7p + q \text{ or } 33 = -7p + q \text{ (equivalent)}$ $-27 = -7(6 - 2q) + q \text{ or } 33 = -7(6 - 2q) + q$ $q = 1, p = 4$ <p>D(4,1)</p> $TD = 5$ $\sqrt{(x-4)^2 + (y-1)^2} = 5$ $x^2 + y^2 - 8x - 2y - 8 = 0$	<p>P1</p> <p>K1</p> <p>N1</p> <p>K1</p> <p>K1</p> <p>K1</p> <p>N1</p> <p>K1K1</p> <p>N1</p>	<p>10</p>

<p>10 (a)</p> <p>19</p> ${}^{20}C_{19} (0.5)^{19} (0.5)^1 \text{ or } {}^{20}C_{20} (0.5)^{20} (0.5)^0$ ${}^{20}C_{19} (0.5)^{19} (0.5)^1 + {}^{20}C_{20} (0.5)^{20} (0.5)^0$ $= 0.00002003$ <p>(b) (i)</p> $P(X > 0740)$ $P\left(Z > \frac{0740 - 0730}{10}\right)$ $= 0.1587$ $= 15.87\%$		<p>P1</p> <p>K1</p> <p>K1</p> <p>N1</p> <p>K1</p> <p>K1</p> <p>N1</p>	<p>10</p>
<p>10 (b) (ii)</p> $P(X > m) = 0.25 \text{ or } P(X < k) = 0.25 \text{ P1}$ $P\left(Z > \frac{m - 0730}{10}\right) = 0.25 \text{ or } P\left(Z < \frac{k - 0730}{10}\right) = 0.25$ $\frac{m - 0730}{10} = 0.674 \text{ or } \frac{k - 0730}{10} = -0.674$ $m = 0737, k = 0723 \text{ (both)}$		<p>P1</p> <p>K1</p> <p>N1</p>	
<p>11 (a)(i)</p> <p>P(0,1) Q(1,0)</p> $k^3 = 1 - (-7)$ $k = 2$ <p>(b)</p> <p>Kawasan berlorek = <math>\int_1^2 (1 - x^3) dx</math></p> $= \left[ x - \frac{x^4}{4} \right]_1^2$ $= \left( 2 - \frac{2^4}{4} \right) - \left( 1 - \frac{1^4}{4} \right)$ $= 2 \frac{3}{4}$		<p>N1</p> <p>K1</p> <p>N1</p> <p>K1</p> <p>N1</p>	<p>10</p>

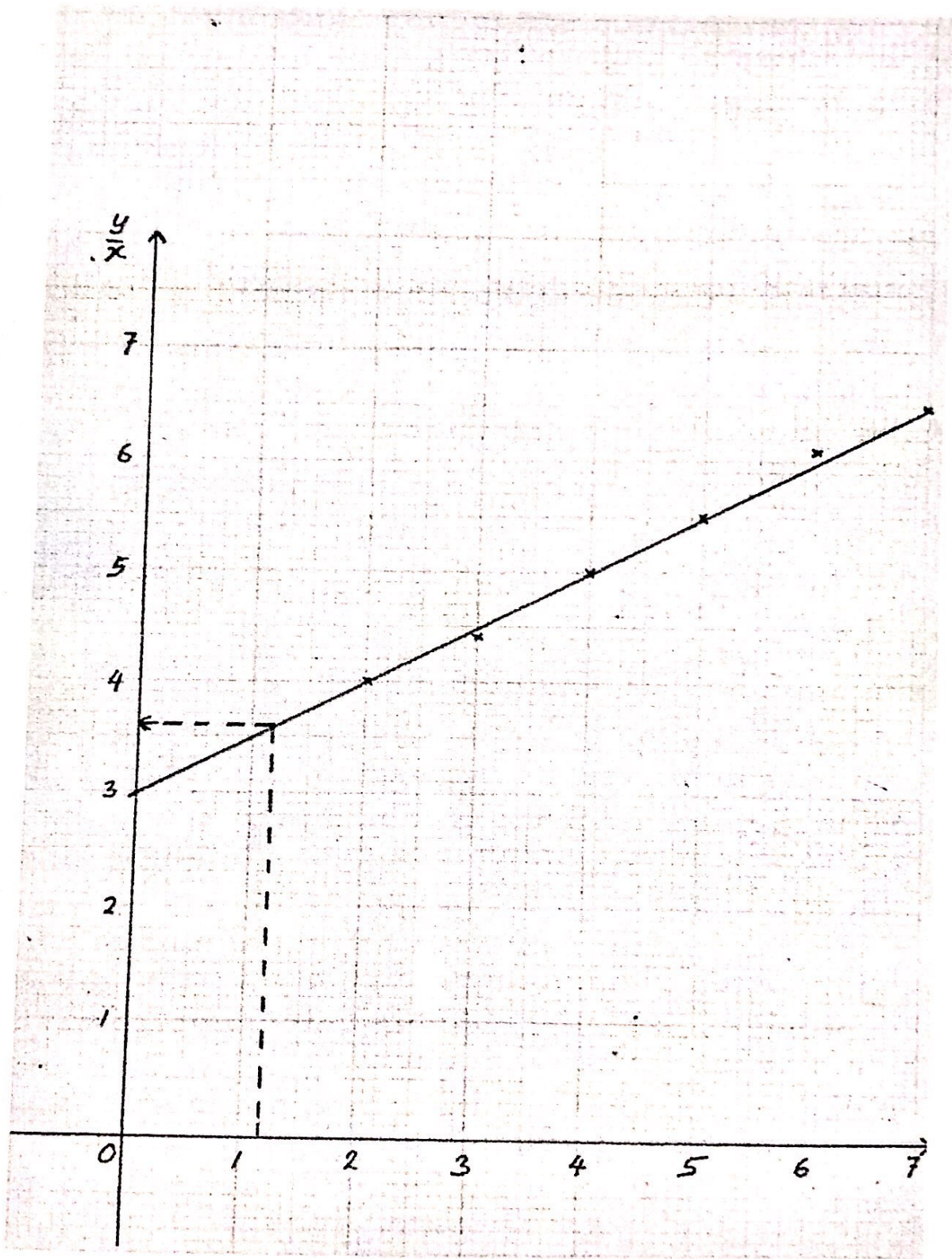
(c)	$  \begin{aligned}  \text{isipadu} &= \pi \int_{-1}^0 (1-x^3)^2 dx \\  &= \pi \int_{-1}^0 (1-2x^3+x^6) dx \\  &= \pi \left[ x - \frac{2x^4}{4} + \frac{x^7}{7} \right]_{-1}^0 \\  &= \pi \left[ (0) - \left( (-1) - \frac{(-1)^4}{2} + \frac{(-1)^7}{7} \right) \right] \\  &= \frac{23}{14} \pi  \end{aligned}  $	P1  K1  K1  N1	
12 (a) (i)	$  \begin{aligned}  EA &= \sqrt{7^2 + 6^2 - 2(7)(6)\cos 60^\circ} \\  &= 6.5574  \end{aligned}  $	K1 N1	10
(ii)	$  \frac{AC}{\sin 30^\circ} = \frac{13.1148}{\sin 10^\circ}  $ <p>6.9783</p>	K1 N1	
(iii)	$  \begin{aligned}  18 &= \frac{1}{2} (6)^2 (6.9783) \sin A \\  \angle BAC &= 59.2951^\circ  \end{aligned}  $	K1 N1	
(b) (i)		K1  N1	
(ii)	$  \frac{5}{\sin 3.12^\circ} = \frac{6}{\sin \angle FPA}  $ <p><math>\angle FPA = 15.8065^\circ, 164.1935^\circ</math></p>	K1 N1	

<p>13 (a)</p>	$6t - 3t^2 = 0$ $t(t - 2) = 0$ $t = 2s$ $\int_2^3 (6t - 3t^2) dt$ $\left[ \frac{6t^2}{2} - \frac{3t^3}{3} \right]_2^3$ $\left[ \frac{6(3)^2}{2} - \frac{3(3)^3}{3} \right] - \left[ \frac{6(2)^2}{2} - \frac{3(2)^3}{3} \right]$ <p>4 meter</p> <p>(c) <math>6 - 6t = 0</math></p> $t = 1$ $3 \text{ ms}^{-1}$	<p>K1 K1 N1  K1  K1  N1  K1 K1 N1</p>	<p>10</p>
<p>14 (a)</p>	$\frac{P_{2017}}{3.20} \times 100 = 150$ $P_{2017} = RM \ 4.80$ <p>(b)</p> $\frac{2.30}{P_{2015}} \times 100 = 115$ $P_{2015} = RM \ 2.00$ <p>(c)</p> $I_{\frac{2017}{2015}} = \frac{115(k) + 110(5) + 150(2) + 130(1)}{k + 5 + 2 + 1} = 120$ $k = 4$ <p>(d)</p> $I_{\frac{2019}{2017}} = \frac{115(4) + 110(5) + 150(2) + 143(1)}{4 + 5 + 2 + 1}$ $= 121.08$	<p>K1  N1  K1  N1  K1K1  N1  K1K1  N1</p>	<p>10</p>



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(a)	I : $x + y \leq 180$ II : $y \leq 3x$ III : $y - x \geq 10$	NI NI NI	
(b)	Appendix ( Rujuk Lampiran 2) One graph correct Three graph Correct Shaded Region	K1 K1 K1	
(c)			
(i)	35	NI	
(ii)	Optimum Point = ( 85,95) Maximun Cost = $18(85) + 11(95)$ = RM 2575	K1 K1 NI	

Lampiran 1



Lampiran 2

