

1449/2
Matematik
Kertas 2
Peraturan
Pemarkahan
September
2020



**MODUL ULANGKAJI BERFOKUS SPM 2020
SET 1**

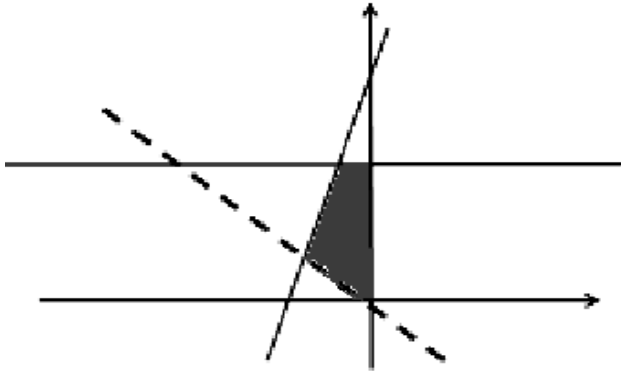
MATEMATIK

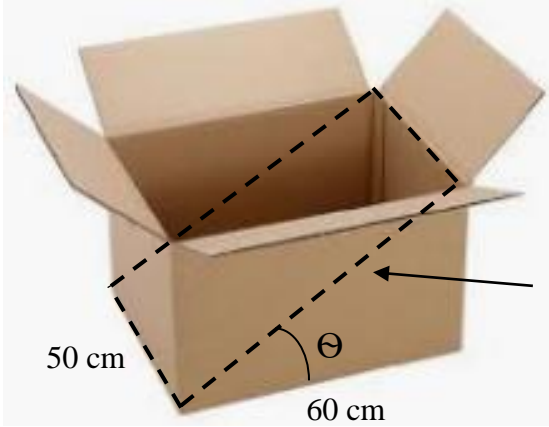
Kertas 2

PERATURAN PEMARKAHAN

Peraturan pemarkahan ini mengandungi 12 halaman bercetak
[Lihat sebelah

Bahagian A
[52 markah]

No	Peraturan Pemarkahan	Markah	
1	 <p data-bbox="365 861 779 934">Garis putus-putus dilihat , $y = -x$ Lorekan betul</p>	P1 K2	3
2	$6x^2 - 48x - 54 = 0$ $x^2 - 8x - 9 = 0$ $(x - 9)(x + 1) = 0$ $x = 9, x = -1$ <p data-bbox="365 1270 592 1302">Laju 9 batu per jam</p>	P1 K1 K1 N1	4
3	<p data-bbox="365 1365 706 1396">Anggap $x = \text{kereta}$, $y = \text{van}$</p> $4x + 6y = 88 \text{ -----(1) @}$ $3x + 12y = 126 \text{ ----- (2)}$ $5x = 50$ $x = 10$ $40 + 6y = 88$ $y = 8$	P1 K1 N1 N1	4

No	Peraturan Pemarkahan	Markah	
4	<p>a)</p>  <p>b) $\tan \Theta = \frac{40}{60}$ $= 33.69^\circ \sim 33.7^\circ$ atau $33^\circ 41'$</p>	P1 K1 N1	3
5	$\frac{1}{3} \times \frac{22}{7} \times 3.5 \times 3.5 \times h = 308$ $\frac{77}{6} \times h = 308$ $h = 308 \times \frac{6}{77}$ $h = 24 \text{ cm}$	K1 K1 K1 N1	4
6	<p>a) koordinat A (8 ,14)</p> <p>b) (0,12) dan (8, -3)</p> $m \text{ CD} = \frac{12 - (-3)}{0 - 8} \text{ atau setara}$ $= -\frac{15}{8}$ <p>c) $m \text{ CD} // m \text{ AB}$,</p> $14 = -\frac{15}{8} (8) + c$ $y = -\frac{15}{8} x + 29$	P1 K1 N1 K1 N1	5

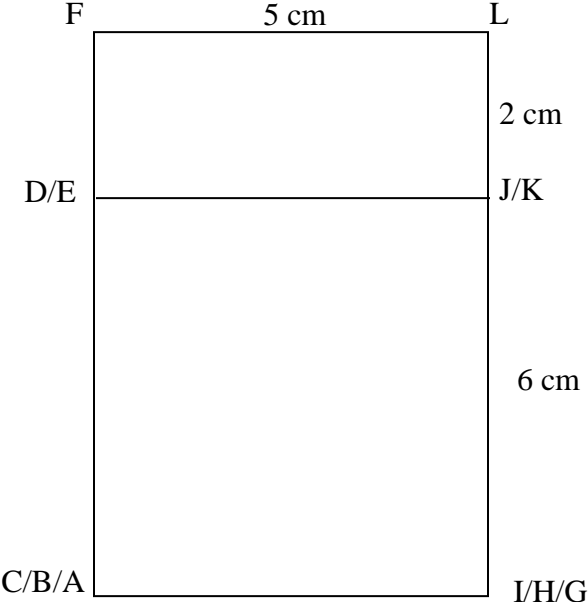
No	Peraturan Pemarkahan	Markah	
7	<p>a i) 27 is an integer or 27 is a prime number <i>27 ialah integer atau 27 ialah nombor perdana</i></p> <p>ii) True / Benar</p> <p>b) Premis 2 : $V = \frac{1}{3}\pi(7)^2(9)$</p> <p>c) Total surface area of the cube / <i>Jumlah luas permukaan kubus</i> $= 6(4)^2$ $= 96 \text{ cm}^2$</p>	P1 P1 P1 K2	5
8	<p>a) $m = \frac{1}{8}, n = -4$</p> <p>b)</p> $\begin{pmatrix} 2 & 4 \\ -5 & -6 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} -6 \\ 3 \end{pmatrix}$ $\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{2(-6) - 4(-5)} \begin{pmatrix} -6 & -4 \\ 5 & 2 \end{pmatrix} \begin{pmatrix} -6 \\ 3 \end{pmatrix} @ \text{ setara}$ $\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{8} \begin{pmatrix} -6(-6) & -4(3) \\ 5(-6) & 2(3) \end{pmatrix} @ \text{ setara}$ <p>(jalan kerja yang mesti ditunjukkan)</p> $\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3 \\ -3 \end{pmatrix}$ <p>$x = 3$ $y = -3$</p>	P1 P1 P1 K1 N1 N1	6

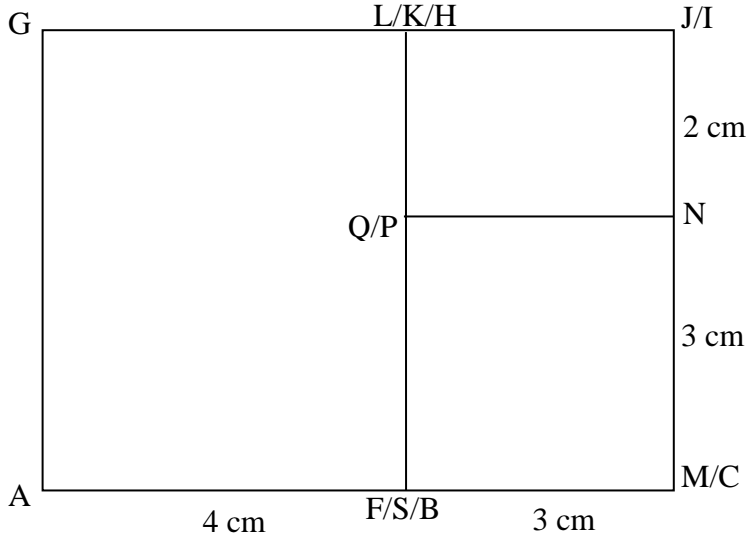
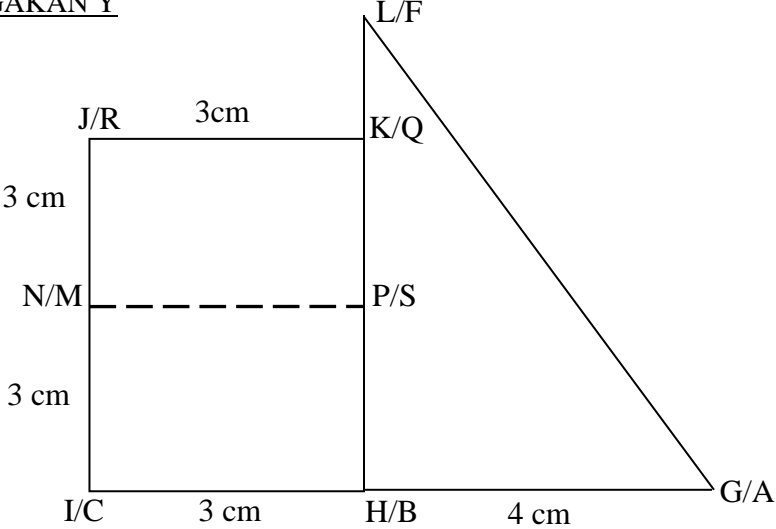
No	Peraturan Pemarkahan	Markah																																										
9	<p>a) $\left(\frac{3}{4} \times 2 \times \frac{22}{7} (28)\right) + 2 \times \frac{22}{7} (14) + 28 + 28$ $= 132 + 88 + 28 + 28$ $= 276 \text{ cm.}$</p> <p>b) $\left(\frac{1}{4} \times \frac{22}{7} \times 14^2\right) + \left(\frac{3}{4} \times \frac{22}{7} \times 28^2\right) - \left(\frac{3}{4} \times \frac{22}{7} \times 14^2\right)$ $= 154 + 1848 + 462$ $= 1540 \text{ unit}^2$</p>	K1K1 N1 K1K1 N1	6																																									
10	<p>a)</p> <table border="1" data-bbox="363 600 1256 888"> <thead> <tr> <th data-bbox="363 600 500 695" rowspan="2">First Card / Kad Pertama</th> <th colspan="5" data-bbox="500 600 1256 642">Second card / Kad Kedua</th> </tr> <tr> <th data-bbox="500 642 662 695">C</th> <th data-bbox="662 642 812 695">O</th> <th data-bbox="812 642 961 695">V</th> <th data-bbox="961 642 1110 695">I</th> <th data-bbox="1110 642 1256 695">D</th> </tr> </thead> <tbody> <tr> <td data-bbox="363 695 500 737">C</td> <td data-bbox="500 695 662 737">(C, C)</td> <td data-bbox="662 695 812 737">(C, O)</td> <td data-bbox="812 695 961 737">(C, V)</td> <td data-bbox="961 695 1110 737">(C, I)</td> <td data-bbox="1110 695 1256 737">(C, D)</td> </tr> <tr> <td data-bbox="363 737 500 779">O</td> <td data-bbox="500 737 662 779">(O, C)</td> <td data-bbox="662 737 812 779">(O, O)</td> <td data-bbox="812 737 961 779">(O, V)</td> <td data-bbox="961 737 1110 779">(O, I)</td> <td data-bbox="1110 737 1256 779">(O, D)</td> </tr> <tr> <td data-bbox="363 779 500 821">V</td> <td data-bbox="500 779 662 821">(V, C)</td> <td data-bbox="662 779 812 821">(V, O)</td> <td data-bbox="812 779 961 821">(V, V)</td> <td data-bbox="961 779 1110 821">(V, I)</td> <td data-bbox="1110 779 1256 821">(V, D)</td> </tr> <tr> <td data-bbox="363 821 500 863">I</td> <td data-bbox="500 821 662 863">(I, C)</td> <td data-bbox="662 821 812 863">(I, O)</td> <td data-bbox="812 821 961 863">(I, V)</td> <td data-bbox="961 821 1110 863">(I, I)</td> <td data-bbox="1110 821 1256 863">(I, D)</td> </tr> <tr> <td data-bbox="363 863 500 888">D</td> <td data-bbox="500 863 662 888">(D, C)</td> <td data-bbox="662 863 812 888">(D, O)</td> <td data-bbox="812 863 961 888">(D, V)</td> <td data-bbox="961 863 1110 888">(D, I)</td> <td data-bbox="1110 863 1256 888">(D, D)</td> </tr> </tbody> </table> <p>bi) {(C, C) (O, O) (V, V) (I, I) (D, D)}</p> $= \frac{5}{25} = \frac{1}{5}$ <p>ii) {(O, C) (O, O) (O, V) (O, I) (O, D) (I, C) (I, O) (I, V) (I, I) (I, D) (C, C) (C, V) (C, D) (V, C) (V, V) (V, D) (D, C) (D, V) (D, D)}</p> $= \frac{19}{25}$	First Card / Kad Pertama	Second card / Kad Kedua					C	O	V	I	D	C	(C, C)	(C, O)	(C, V)	(C, I)	(C, D)	O	(O, C)	(O, O)	(O, V)	(O, I)	(O, D)	V	(V, C)	(V, O)	(V, V)	(V, I)	(V, D)	I	(I, C)	(I, O)	(I, V)	(I, I)	(I, D)	D	(D, C)	(D, O)	(D, V)	(D, I)	(D, D)	P2 K1 N1 K1 N1	6
First Card / Kad Pertama	Second card / Kad Kedua																																											
	C	O	V	I	D																																							
C	(C, C)	(C, O)	(C, V)	(C, I)	(C, D)																																							
O	(O, C)	(O, O)	(O, V)	(O, I)	(O, D)																																							
V	(V, C)	(V, O)	(V, V)	(V, I)	(V, D)																																							
I	(I, C)	(I, O)	(I, V)	(I, I)	(I, D)																																							
D	(D, C)	(D, O)	(D, V)	(D, I)	(D, D)																																							
11 (a)	<p>16 ms^{-1}</p> <p>(b) $= \frac{16 - 7}{5 - 0}$ $= 1.8 \text{ ms}^{-2}$</p> <p>(c) $(t - 5) \times 16 + \frac{1}{2} \times 16 \times (20 - t) = 160$ $t = 10\text{s}$</p>	P1 K1 N1 K2 N1	6																																									
			52																																									

Bahagian B
[48 markah]

No	Peraturan Pemarkahan	Markah							
12 (a)	<p><u>Melengkapkan Jadual</u></p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;">x</td> <td style="padding: 5px;">-3</td> <td style="padding: 5px;">1</td> </tr> <tr> <td style="padding: 5px;">y</td> <td style="padding: 5px;">7</td> <td style="padding: 5px;">-5</td> </tr> </table> <p><u>Nota</u> : Jika jadual tidak lengkap, benarkan K1K1 jika ditanda dengan tepat pada grafnya.</p>	x	-3	1	y	7	-5	K1 ,K1	
x	-3	1							
y	7	-5							
(b)	<p><u>Graf</u></p> <p>Paksi dilukis dengan arah yang betul dan seragam dalam $-3.5 \leq x \leq 4$</p> <p>7 titik dan 2 titik* ditanda betul dalam $-3.5 \leq x \leq 4$</p> <p>Lengkung licin dan berterusan tanpa bahagian lurus dan melalui 9 titik yang betul.</p>	P1 K2 N1	12						
(c)	<p>i) $-8.5 \leq y \leq -7.5$</p> <p>(ii) $3.65 \leq x \leq 3.75$</p>	P1 P1							
(d)	<p>$y = 2x-1$</p> <p>Garis lurus $y = 2x-1$ melalui (-3,-7), (0,-1),(4,7) dilukis memotong dua bahagian graf.</p> <p>Nilai-nilai x : $0.4 \leq x \leq 0.5$: $3.2 \leq x \leq 3.3$</p>	K2 N1 N1							

No	Peraturan Pemarkahan	Markah																													
13	<p>a) i) (-8 , 8)</p> <p>ii) (8 , -8) (-8 , 8) seen award P1</p> <p>b) i) M : Rotation, 90° clockwise, about centre (6 , 3) <i>M</i> : Putaran , 90° ikut arah jam , pada pusat (6 , 3)</p> <p>N : Enlargement with scale factor of 3 about centre (10 , 7) <i>N</i> : Pembesaran dengan faktor skala 3 pada pusat (10 ,7)</p> <p>(ii) Area of image/ <i>Luas imej</i> $= k^2 \times \text{Area of object}$ $= 3^2 \times 16$ $= 144 \text{ m}^2$</p> <p>Area of shaded region/<i>Luas kawasan berlorek</i> $= 144 -16$ $= 128 \text{ m}^2$</p>	P1 P2 P3 P3 K1 K1 N1	12																												
14 (a)	<table border="1" data-bbox="362 1098 1252 1524"> <thead> <tr> <th>Class Interval <i>Selang kelas</i></th> <th>Cum Frequency <i>Kekerapan Longgokan</i></th> <th>Upper Boundary <i>Sempadan Atas</i></th> <th>Midpoint <i>Titik Tengah</i></th> </tr> </thead> <tbody> <tr> <td>22 - 26</td> <td>4</td> <td>26.5</td> <td>24</td> </tr> <tr> <td>27 - 31</td> <td>22</td> <td>31.5</td> <td>29</td> </tr> <tr> <td>32 - 36</td> <td>42</td> <td>36.5</td> <td>34</td> </tr> <tr> <td>37 - 41</td> <td>60</td> <td>41.5</td> <td>39</td> </tr> <tr> <td>42 - 46</td> <td>74</td> <td>46.5</td> <td>44</td> </tr> <tr> <td>47 - 51</td> <td>80</td> <td>51.5</td> <td>49</td> </tr> </tbody> </table> <p>Lajur 1 , semua selang kelas betul Lajur 2 , semua kekerapan longgokan betul Lajur 3 , semua sempadan atas betul Lajur 4, semua titik tengah betul</p>	Class Interval <i>Selang kelas</i>	Cum Frequency <i>Kekerapan Longgokan</i>	Upper Boundary <i>Sempadan Atas</i>	Midpoint <i>Titik Tengah</i>	22 - 26	4	26.5	24	27 - 31	22	31.5	29	32 - 36	42	36.5	34	37 - 41	60	41.5	39	42 - 46	74	46.5	44	47 - 51	80	51.5	49	P1 P1 P1 P1	12
Class Interval <i>Selang kelas</i>	Cum Frequency <i>Kekerapan Longgokan</i>	Upper Boundary <i>Sempadan Atas</i>	Midpoint <i>Titik Tengah</i>																												
22 - 26	4	26.5	24																												
27 - 31	22	31.5	29																												
32 - 36	42	36.5	34																												
37 - 41	60	41.5	39																												
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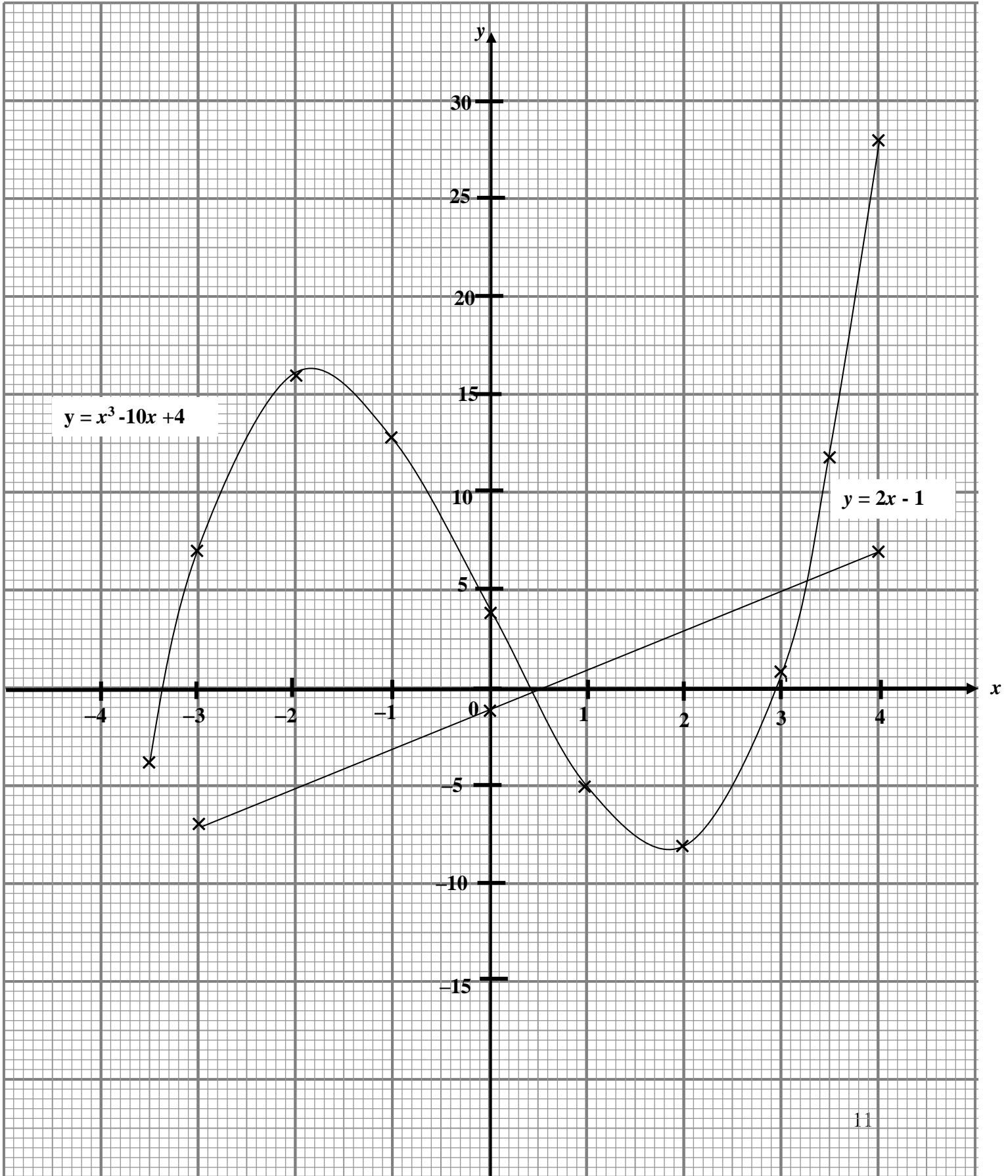
No	Peraturan Pemarkahan	Markah	
(b)	$\frac{(24 \times 8) + (29 \times 14) + (34 \times 20) + (39 \times 18) + (44 \times 14) + (49 \times 6)}{8 + 14 + 20 + 18 + 14 + 6}$ $\frac{2890}{80}$ $= 36.13$	K2	
		N1	
(c)	<p>Skala seragam dengan paksi mengufuk, ($26.5 \leq x \leq 51.5$) dan paksi mencancang, ($0 \leq y \leq 24$)</p> <p>Semua 7 titik diplot dengan skala yang seragam.</p> <p>Graf ogif dilukis dengan licin.</p>	P1	
		K2	
(d)	25%*	N1	
15(a)	<p><u>DONGAKAN X</u></p>  <p>Bentuk betul dengan semua bentuk segiempat tepat IJDC dan KLEF .</p> <p>LJ < FI < JI > IC < CD > DF</p> <p>Semua ukuran betul ± 0.2 cm dan sudut dibucu segi empat tepat $90^\circ \pm 1^\circ$</p>	K1	
		K1	
		N1	

No	Peraturan Pemarkahan	Markah	
(b)(i)	<p>PELAN</p>  <p>Bentuk betul dengan 2 segiempat tepat GLFA dan LJNQ dan segiempat sama QNMF</p> <p>$GL > LJ > JN < NM = MF < FA < GA$</p> <p>Semua ukuran betul ± 0.2 cm dan sudut dibucu segi empat tepat $90^\circ \pm 1$</p>	K1	
(b)(ii)	<p><u>DONGAKAN Y</u></p>  <p>Bentuk betul dengan garis penuh segiempat tepat JKHI dan segitiga LGH</p> <p>NP diwakili dengan garisan putus-putus.</p> <p>$LG > GH > HI = EI = IN = NJ = JK > LK$</p> <p>Semua ukuran betul ± 0.2 cm dan sudut dibucu segi empat tepat $90^\circ \pm 1^\circ$</p>	K1 K1 K1 N2	12

No	Peraturan Pemarkahan	Markah	
16	<p>a) $65^{\circ}T$</p> <p>b)</p> $120 \times 60 \times \cos 55^{\circ}$ <p>= 4129.77 batu nautika</p> <p>c) $(180^{\circ} - 55^{\circ} - 55^{\circ}) \times 60$ = 4200 batu nautika</p> <p>d) i) $\frac{5100}{60} = 85^{\circ}$</p> <p>850-550=30°U</p> <p>ii) $\left(\frac{4129.77 + 5100}{855} \right)$ = 10.8 jam</p>	<p>P1P1</p> <p>K1K1</p> <p>N1</p> <p>K1K1</p> <p>N1</p> <p>K1</p> <p>N1</p> <p>K1</p> <p>N1</p>	<p>12</p>
			60
	JUMLAH KESELURUHAN MARKAH		112

Lampiran 1

Graph for Question 12



Cumulative Frequency

Graph for Question 14

