



PRAKTIS BESTARI
PROJEK JAWAB UNTUK JAYA (JUJ) 2017

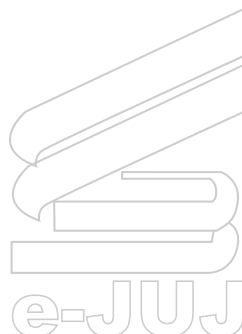


SIJIL PELAJARAN MALAYSIA
ADDITIONAL MATHEMATICS
Kertas 2 / Set 1

3472/2

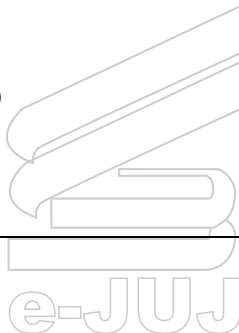
PERATURAN PEMARKAHAN

Peraturan Pemarkahan ini mengandungi 12 halaman bercetak



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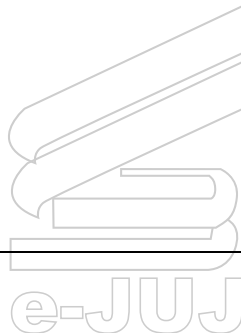
BIL	PERATURAN PEMARKAHAN	MARKAH	JUMLAH MARKAH
1	(a) $\sqrt{(x-3)^2 + (y+1)^2} = 5$ $x^2 - 6x + 9 + y^2 + 2y + 1 = 25$ $x^2 + y^2 - 6x + 2y - 15 = 0$ (b) $y^2 + 2y - 15 = 0$ $(y+5)(y-3) = 0$ $(0, -5)$ and $(0, 3)$	1m 1m 1m 1m 1m 1m	<hr/> 6
2	(a) $\frac{dy}{dx} = 12 - 3x^2$ $12 - 3x^2 = 0$ $x^2 = 4$ $x = \pm 2$ Koordinat titik pusingan, $x = 2, y = 12(2) - (2)^3$, $x = -2, y = 12(-2) - (-2)^3$ $y = 16$ $y = -16$ $(2, 16)$ and $(-2, -16)$ (b) $\frac{d^2y}{dx^2} = -6x$ $\frac{d^2y}{dx^2} = -6(2)$ $\frac{d^2y}{dx^2} = -6(-2)$ Maximum point = $(2, 16)$ and minimum point = $(-2, -16)$	1m 1m 1m 1m 1m	<hr/> 6
3	(a) $\frac{\sum fx}{\sum f} = \frac{1590}{40}$ 39.75 $\sigma^2 = \frac{78980}{40} - (39.75)^2$ $\sigma = 19.86$ (b) $Q_1 = 20.5 + \left(\frac{10-8}{9}\right)10$ $Q_1 = 22.72$	1m 1m 1m 1m 1m, 1m 1m	<hr/> 7



4	<p>(a) $\frac{\pi r^2}{2}$ $\frac{3.142 \times (30)^2}{2}$ 1413.9 cm^2</p> <p>(b) $Perimeter = r\theta_1 + 4r\theta_2$ $\theta_1 = \frac{60^\circ \times 3.142}{180^\circ} = 1.047 \quad \therefore 30(1.047) = 31.41$ $\theta_2 = \frac{180^\circ \times 3.142}{180^\circ} = 3.142 \quad \therefore 4(7.5)(3.142) = 94.26$ $31.41 + 94.26$ 125.67 cm</p>	<p>1m 1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p>	<p><hr/>6</p>
5	<p>$14x(7x + y) = 294$ @ $2y + 14x + \frac{22}{7}(7x) = 64$ $y = 32 - 18x$ $7x^2 + x(32 - 18x) = 21$ $x = \frac{-(-32) \pm \sqrt{(-32)^2 - 4(11)(21)}}{2(11)}$ $x = 1$ @ $x = 1.909$ (abaikan) dan $y = 14$ Panjang = $14(1)$ dan Lebar = $7(1) + 14$ = 14 cm = 21 cm</p>	<p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p>	<p><hr/>7</p>

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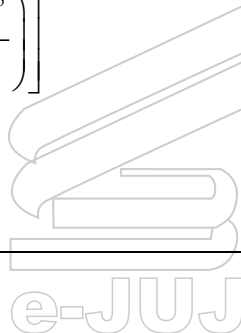
6	<p>(a) 108 bulan = 9 tahun</p> $T_{10} = 85000(0.92)^9$ <p>RM 40 133.72</p> <p>(b) $85000(0.92)^{n-1} < 30000$</p> <p>Use log: $\lg(0.92)^{n-1} < \lg 0.3529$ to find $n = 14$</p> $S_{14} = \frac{1000(1.1^{14} - 1)}{1.1 - 1}$ <p>RM 27 974.90</p>	<p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m, 1m</p> <p>1m</p> <p>1m</p>	<hr/> <p>8</p>							
7	<p>(a)</p> <table border="1" data-bbox="284 857 1161 909"> <tr> <td>$\log_{10} y$</td> <td>0.25</td> <td>0.33</td> <td>0.42</td> <td>0.50</td> <td>0.59</td> <td>0.66</td> </tr> </table> <p>Plot 1 point correctly</p> <p>Plot all point correctly</p> <p>Draw line of best fit.</p> <p>(b)</p> $\log_{10} y = (-\log_{10} a)x + \log_{10} b$ <p>(i)</p> $-\log_{10} a = \frac{0.68 - 0.25}{6 - 1}$ $= 0.086$ $a = \text{anti log}(-0.086)$ $a = 0.8204$ <p>(ii)</p> $\log_{10} b = 0.16$ $b = \text{anti log}(0.16)$ $b = 1.445$ <p>(iii)</p> $\log_{10} y = 0.46$ $y = 2.884$	$\log_{10} y$	0.25	0.33	0.42	0.50	0.59	0.66	<p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p>	<hr/> <p>10</p>
$\log_{10} y$	0.25	0.33	0.42	0.50	0.59	0.66				

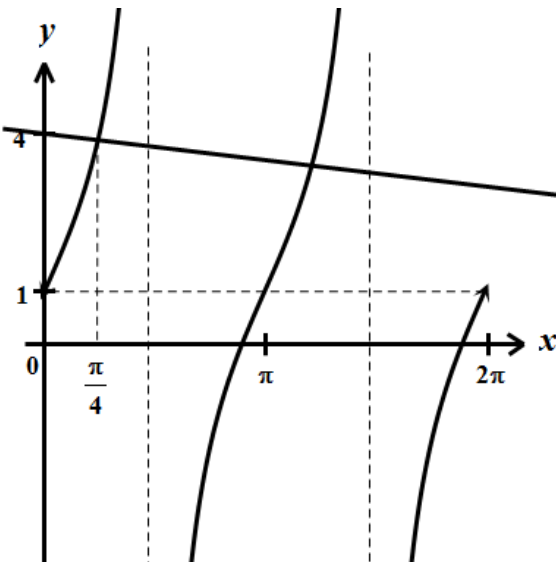


8	<p>(a)</p> <p>(i) $\vec{DA} = \vec{DO} + \vec{OA}$ $= -\frac{1}{2}\vec{b} + \vec{a}$</p> <p>(ii) $\vec{OC} = \vec{OA} + \vec{AC}$ $= \vec{a} + \frac{2}{3}(-\vec{a} + \vec{b})$ $= \frac{1}{3}\vec{a} + \frac{2}{3}\vec{b}$</p> <p>(b)</p> <p>(i) $\vec{OE} = h\left(\frac{1}{3}\vec{a} + \frac{2}{3}\vec{b}\right)$ $= \frac{1}{3}h\vec{a} + \frac{2}{3}h\vec{b}$</p> <p>(ii) $\vec{OE} = \vec{b} + k\left(-\frac{1}{2}\vec{b} + \vec{a}\right)$ $= k\vec{a} + \left(1 - \frac{1}{2}k\right)\vec{b}$</p> <p>(c) $\frac{1}{3}h\vec{a} + \frac{2}{3}h\vec{b} = k\vec{a} + \left(1 - \frac{1}{2}k\right)\vec{b}$ $\frac{1}{3}h = k \quad \text{ATAU} \quad \frac{2}{3}h = 1 - \frac{1}{2}k$ $k = \frac{2}{5}, \quad h = \frac{6}{5}$</p>	<p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p>	<p>10</p>
9	<p>(a) $p = 0.75, q = 0.25, n = 10$</p> <p>i) $P(X = 6) = {}^{10}C_6(0.75)^6(0.25)^4$ $= 0.145998$ $= 0.1460$</p> <p>ii) $P(X \leq 8) = 1 - P(X > 8)$ $= 1 - P(X = 9) - P(X = 10)$ $= 1 - {}^{10}C_9(0.75)^9(0.25)^1 - {}^{10}C_{10}(0.75)^{10}(0.25)^0$ $= 0.7560$</p>	<p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p>	

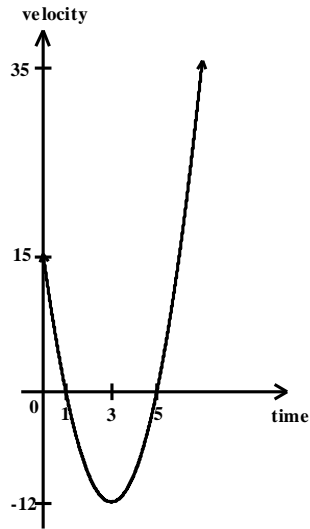
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	<p>(b) $\mu = 50, \sigma = 3$</p> <p>i) $P(X > 60) = P\left(Z > \frac{55-50}{20}\right)$ $= P(Z > 0.25)$ $= 0.4013$</p> <p>ii) $P(Z > \frac{m-50}{20}) = 0.15$ $\frac{m-50}{20} = 1.036$ $m-50 = 20.72$ $m = 70.72$</p>	<p>1m</p> <p>1m</p> <p>1m, 1m</p> <p>1m</p>	<p><u>10</u></p>
10	<p>(a) $y+4=(y-2)^2$ OR $x=(x-4-2)^2$ $A(9,5), B(0,4)$</p> <p>(b) Area $= \frac{1}{2}(4+9)(5) - \int_0^5 (y-2)^2 dy$ $= 32.5 - \left[\frac{(y-2)^3}{3(1)} \right]_0^5$ $= 32.5 - \left[\left(\frac{(5-2)^3}{3(1)} \right) - \left(\frac{(0-2)^3}{3(1)} \right) \right]$ $= 20\frac{5}{6}$</p> <p>(c) Volume $= \pi \int_0^2 (y-2)^4 dy$ $= \pi \left[\frac{(y-2)^5}{5(1)} \right]_0^2$ $= \pi \left[\left(\frac{(2-2)^5}{5(1)} \right) - \left(\frac{(0-2)^5}{5(1)} \right) \right]$ $\frac{32}{5}\pi$</p>	<p>1m</p> <p>1m, 1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m</p>	<p><u>10</u></p>

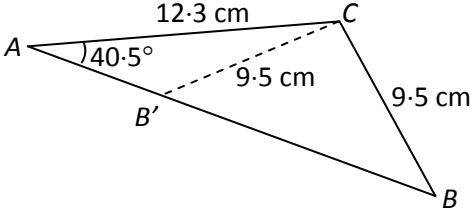


11 a)	$\frac{3 - 3\cos 2x + \sin 2x}{\sin 2x}$ $= \frac{3 - 3\cos 2x}{\sin 2x} + \frac{\sin 2x}{\sin 2x}$ $= \frac{3(1 - \cos 2x)}{\sin 2x} + 1$ $= \frac{3(2\sin^2 x)}{2\sin x \cos x} + 1$ $= 3\tan x + 1$ <p>(b)</p>  <p>(i)</p> <p>Shape of $\tan x$ for $0 \leq x \leq 2\pi$</p> <p>1 cycle for $0 \leq x \leq 2\pi$</p> <p>Shifted at 1</p> <p>Amplitude $y = 4$ at $x = \frac{\pi}{4}$</p> <p>(ii) $y = -\frac{x}{2\pi} + 4$</p> <p>Draw line $y = -\frac{x}{2\pi} + 4$</p> <p>No. of solution = 2</p>	1m 1m 1m 1m 1m 1m	10
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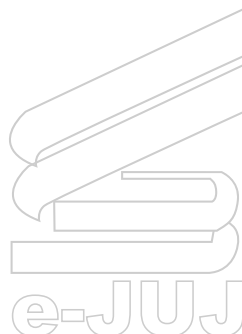
12	<p>(a) (i) $3t^2 - 18t + 15 = 0$ $(t - 5)(t - 1) = 0$ $t = 1 \quad t = 5$</p> <p>(ii) $(1)^3 - 9(1)^2 + 15(1)$ or $(5)^3 - 9(5)^2 + 15(5)$</p> <p>32 m</p> <p>(iii) $6t - 18 = 0$</p> <p>-12 m/s</p> <p>(b)</p>  <p>Correct shape Correct minimum point and the roots or y-intercept All correct</p>	1m 1m 1m 1m 1m 1m 1m 1m 1m 1m 1m	10
13	<p>(a)</p> <p>(i) $\frac{\sin \theta}{12.3} = \frac{\sin 40.5}{9.5}$</p> <p>$\angle ABC = 57.23^\circ$</p> <p>(ii) $12.3^2 = 9.8^2 + 5.2^2 - 2(9.8)(5.2)\cos \theta$ 106.07°</p>	1m 1m 1m 1m	

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	<p>(iii) $\text{Luas} = \frac{1}{2}(9.8)(5.2)\text{Sin}106.07 + \frac{1}{2}(12.3)(9.5)\text{Sin}82.27$</p> <p>82.38</p> <p>(b) (i)</p>  <p>(ii) $180^\circ - 57.23^\circ$</p> <p>122.77°</p>	<p>1m,1m 1m</p> <p>1m</p> <p>1m 1m</p>	<p style="text-align: center;"><u>10</u></p>
14	<p>a) (i) $x + y \leq 160$</p> <p>(ii) $x : y \leq 3 : 1$</p> <p>$x \leq 3y$</p> <p>(iii) $100x + 80y \geq 8000$</p> <p>b) Draw one line correctly</p> <p>Draw all line correctly</p> <p>Shaded the region R correctly</p> <p>c) (i) 32</p> <p>(ii) Use point (120,40)</p> <p>Profit = $15(120) + 10(40)$</p> <p>RM 2200</p>	<p>1m</p> <p>1m 1m</p> <p>1m</p> <p>1m</p> <p>1m</p> <p>1m 1m</p>	<p style="text-align: center;"><u>10</u></p>

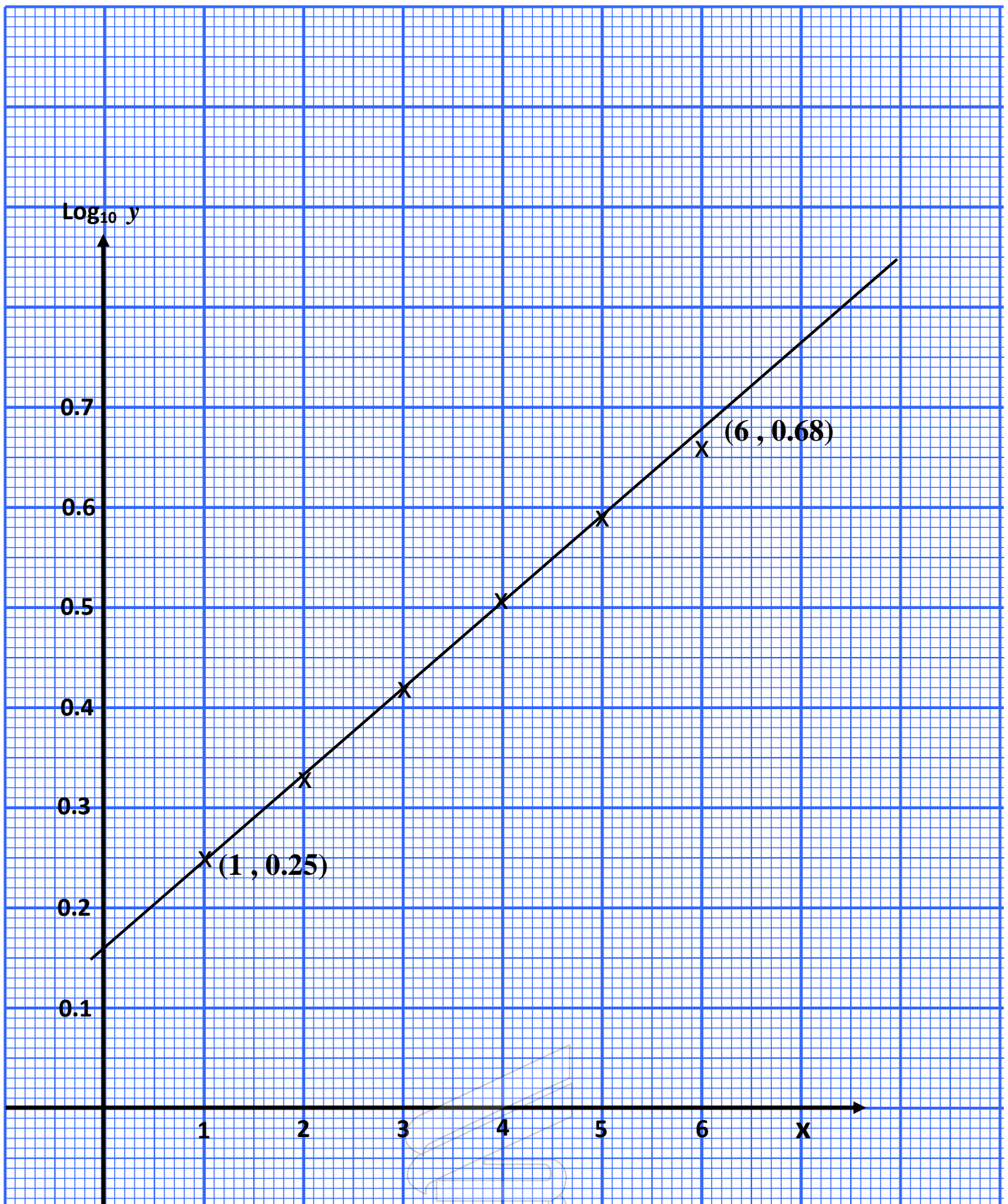
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15	(a)		
	<p>A:</p> $= \frac{5.00}{4.00} \times 100$ $= 125$	1m	
	B : 128	1m	
	C: 116	2m	
	D: 75		
	(b)		
	$\bar{I} = \frac{125(2) + 128(m) + 116(1) + 75(4)}{2 + m + 1 + 4}$	1m	
	$105 = \frac{125(2) + 128(m) + 116(1) + 75(4)}{2 + m + 1 + 4}$	1m	
	$m = 3$	1m	
	(c)		
	$I_{\frac{15}{12}} = 110$	1m	
	$I_{\frac{15}{08}} = \frac{105 \times 110}{100}$ $= 115.5$	1m	
		1m	



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GRAF SOALAN NO. 7



GRAF SOALAN NO. 15

