

SULIT



PRAKTIS BESTARI
PROJEK JAWAB UNTUK JAYA (JUJ) 2016



SIJIL PELAJARAN MALAYSIA
ADDITIONAL MATHEMATICS
Kertas 2
SET 2

3472/2

PERATURAN PEMARKAHAN

YAYASAN
PAHANG
PAHANG STATE FOUNDATION

Peraturan Pemarkahan ini mengandungi 9 halaman bercetak

SKEMA JAWAPAN KERTAS 2 (SET 2) JUJ 2016

(ii)	$\sum fx = 546 \text{ and } \sum fx^2 = 6369$ $\sigma = \sqrt{\frac{6369}{60} - \left(\frac{546}{60}\right)^2}$ <p style="margin-left: 20px;">4.877</p>	1m 1m 1m	7
4.(a)	$a = 400 \text{ and } r = 0.9$ $T_{10} = 400(0.9)^9$ 155 cm	1m 1m 1m	7
(b)	$\frac{400(1-0.9^n)}{1-0.9} > 2500$ $0.9^n < 0.375$ $n > \frac{\log_{10} 0.375}{\log_{10} 0.9}$ 10 minute	1m 1m 1m	
5.(a)	Midpoint Zahir and Aisyah = $\left(\frac{10+6}{2}, \frac{60+55}{2}\right)$ Salina: $\frac{x+(-10)}{2} = \frac{10+60}{2}$ or $\frac{y+20}{2} = \frac{60+55}{2}$ (80,95)	1m 1m 1m	7
(b)	Hafiz to Zahir = $\sqrt{(-10-10)^2 + (60-20)^2}$ OR Aisyah to Zahir = $\sqrt{(60-10)^2 + (55-60)^2}$ Hafiz: Hafiz $\sqrt{2000} <$ Aisyah $\sqrt{2525}$	1m 1m	
(c)	$\frac{55-60}{60-10} = \frac{58-60}{p-10}$ $p = 30$	1m 1m	

SKEMA JAWAPAN KERTAS 2 (SET 2) JUJ 2016

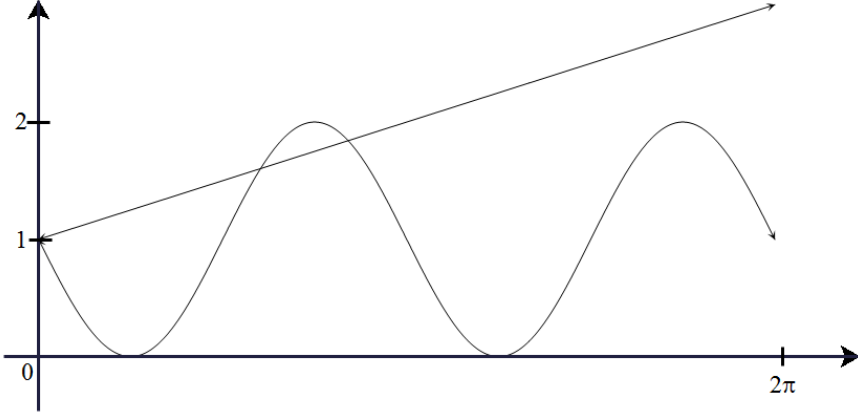
6.	$\cos \theta = \frac{20}{40}, \therefore \theta = 60^\circ / \frac{1}{3} \pi \text{ rad}$ $\text{Luas Sektor} = \frac{1}{2} (40)^2 \left(\frac{2}{3} \pi \right)$ $= 1675.516 \text{ cm}^2$ $\text{Luas Segitiga} = \frac{1}{2} (40)^2 \sin 60^\circ \therefore \text{Luas tembereng} \Rightarrow 1675.516 - 692.820$ $= 692.820 \text{ cm}^2 \qquad \qquad \qquad = 982.969$ $\text{Luas kawasan air} = \text{Luas bulatan} - \text{Luas tembereng}$ $= 5026.8522 - 982.969$ $= 4,043.8522 \text{ cm}^2$ $\text{Isipadu air} = 4,043.8522 \times 240$ $= 970,524.539 \text{ cm}^3$ $\therefore \text{Tinggi } h = \frac{970,524.539}{5,026.548}$ $h = 193.1 \text{ cm}$	1m 1m 1m 1m 1m 1m 1m	7
7.9(a) (i)(ii)	$\vec{BR} = 5\vec{y} \quad \text{or} \quad \vec{AP} = 8\vec{x}$ $\vec{BP} = \vec{BO} + \vec{OP} \quad \text{or} \quad \vec{AR} = \vec{AO} + \vec{OR}$ $\vec{BP} = -3\vec{y} + 12\vec{x}$ $\vec{AR} = -4\vec{x} + 8\vec{y}$	1m 1m 1m 1m	
(b)	$\vec{PQ} = 3h\vec{y} - 12h\vec{x}$ $\vec{QR} = -4k\vec{x} + 8k\vec{y}$ $\vec{PR} = -12\vec{x} + 8\vec{y}$ <p>Solve $3h + 8k = 8$ and $-12h - 4k = -12$</p> $h = \frac{16}{21}$ $k = \frac{5}{7}$	1m 1m 1m 1m 1m 1m	10

SKEMA JAWAPAN KERTAS 2 (SET 2) JUJ 2016

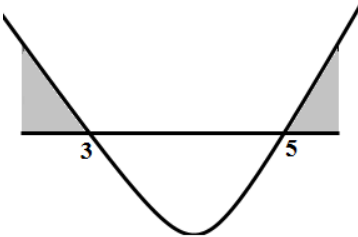
8.(a)	<table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tbody> <tr> <td style="padding: 2px 5px;">$\log_{10} x$</td> <td style="padding: 2px 5px;">0.10</td> <td style="padding: 2px 5px;">0.20</td> <td style="padding: 2px 5px;">0.40</td> <td style="padding: 2px 5px;">0.50</td> <td style="padding: 2px 5px;">0.70</td> <td style="padding: 2px 5px;">0.80</td> </tr> <tr> <td style="padding: 2px 5px;">$\log_{10} y$</td> <td style="padding: 2px 5px;">0.68</td> <td style="padding: 2px 5px;">0.58</td> <td style="padding: 2px 5px;">0.42</td> <td style="padding: 2px 5px;">0.34</td> <td style="padding: 2px 5px;">0.18</td> <td style="padding: 2px 5px;">0.08</td> </tr> </tbody> </table> <p>Plot one point with scale giving</p> <p>Plot all point correctly</p> <p>Line of best fit</p>	$\log_{10} x$	0.10	0.20	0.40	0.50	0.70	0.80	$\log_{10} y$	0.68	0.58	0.42	0.34	0.18	0.08	1m 1m 1m 1m	
$\log_{10} x$	0.10	0.20	0.40	0.50	0.70	0.80											
$\log_{10} y$	0.68	0.58	0.42	0.34	0.18	0.08											
(b)	$\log_{10} y = -p \log_{10} x + \log_{10} q$																
(i)	$-p = \text{gradient}$ $-p = \frac{0.68 - 0.08}{0.1 - 0.8} = -0.8571$ $p = 0.8571$	1m 1m															
(ii)	$*c = 0.76$ $\log_{10} q = 0.76$ $q = 5.754$ $0.75 \leq *c \leq 0.77$	1m 1m 1m	10														
9.(a)	$2 \int_0^2 g(x) dx + \int_0^2 3x dx$ $2(7) + \left[\frac{3x^2}{2} \right]_0^2$ 20	1m 1m 1m															
(b)(i)	$p(2) - 7 = 13$ $p = 10$	1m 1m															
(ii)	$y = 2x^2 + c$ $10 = 2(2)^2 + c$ $y = 2x^2 + 2$	1m 1m 1m															

SKEMA JAWAPAN KERTAS 2 (SET 2) JUJ 2016

(iii)	$M_N = -\frac{1}{8} \text{ and use } y-10 = -\frac{1}{8}(x-2)$ $y = -\frac{x}{8} + \frac{41}{4}$	1m 1m	<hr style="width: 50%; margin: auto;"/> <p>10</p>
10.(a)	<p>(i) $P(X \geq 4) = 1 - P(X=3) - P(X=2) - P(X=1) - P(X=0)$ Use ${}^n C_r (p)^r (q)^{n-r}$ $= 0.48625$</p> <p>(ii) $27.3 = n(0.35)(0.65)$ $n = 120$</p> <p>(b) $P(28 \leq X \leq 40)$ $= P\left(\frac{28-30}{5.2} \leq Z \leq \frac{40-30}{5.2}\right)$ $= (-0.385 \leq Z \leq 1.923)$ $= 1 - P(Z \leq -0.385) - P(Z \geq 1.923)$ $= 1 - 0.3501 - 0.0272$ $= 0.6227$ $= \frac{1}{0.6227} \times 100$ $= 160$</p>	1m 1m 1m 1m 1m 1m 1m 1m 1m	<hr style="width: 50%; margin: auto;"/> <p>10</p>
11.(a)	$= (\cos 2\theta + 1) \tan \theta$ $= (2\cos^2 \theta - 1 + 1) \left(\frac{\sin \theta}{\cos \theta} \right)$ $= 2\cos \theta \sin \theta$ $= \sin 2\theta$	1m 1m	

<p>(b)</p>	 <p>Shape of positive sine curve 2 cycles for $0 \leq \theta \leq 2\pi$ Maximum = 2 and minimum = 0 Reflection of sine graph</p> <p>Shift up 1 at y-axis</p> $(\cos 2\theta + 1) \tan \theta = -\frac{x}{\pi}$ $\sin 2\theta = -\frac{x}{\pi}$ $1 - y = -\frac{x}{\pi}$ $y = 1 + \frac{x}{\pi}$ <p>Sketch the straight line on the graph The numbers of solution are 3</p>	<p>1m 1m 1m 1m 1m 1m 1m</p>	<p style="text-align: center; border-top: 1px solid black;">10</p>
<p>12.(a)</p>	$15 = \frac{1}{2} \times 6 \times 7 \times \sin \angle BCD$ $\angle BCD = 45.58^\circ$ <p>(b)</p> $(BD)^2 = 6^2 + 7^2 - 2(6)(7) \cos 45.58^\circ$ $BD = 5.119 \text{ cm}$ <p>(c)</p> $\frac{10}{\sin 35^\circ} = \frac{5.119}{\sin \angle DAB}$ $\angle ABD = 180^\circ - 17.07^\circ - 35^\circ$ $\angle ABD = 127.93^\circ$	<p>1m 1m 1m 1m 1m 1m</p>	

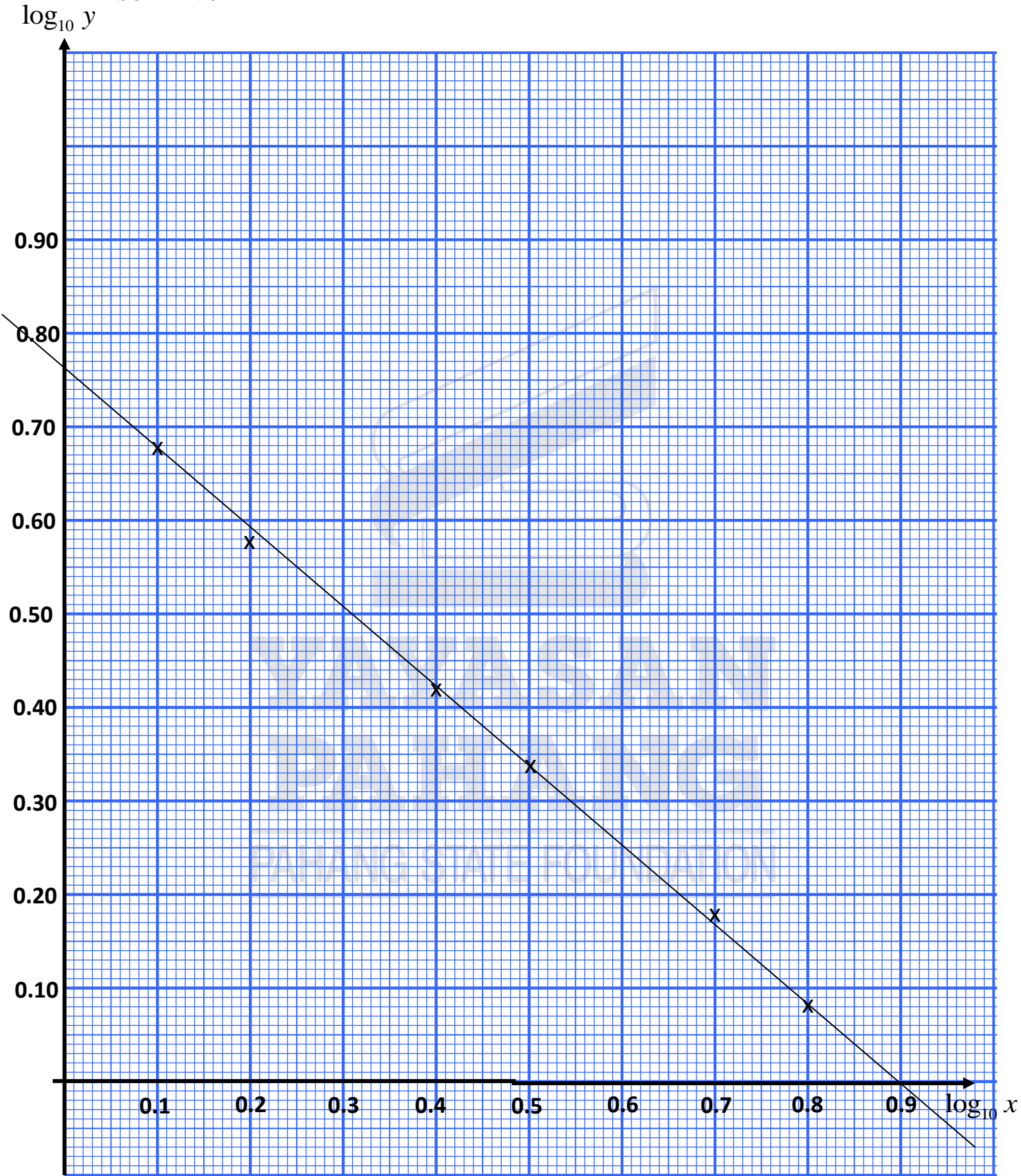
SKEMA JAWAPAN KERTAS 2 (SET 2) JUJ 2016

(d)	$\frac{1}{2} \times 5.119 \times 10 \times \sin 127.93^\circ$ $20.19 + 15$ 35.19	1m 1m 1m	10
13.(a)	$v = 15 - 8t + t^2$ $a = \frac{dv}{dt} = -8 + 2t$ <p>Initial acceleration, $t = 0$</p> $a = -8$	1m 1m 1m	
(b)	$15 - 8t + t^2 > 0$ $(5 - t)(3 - t) > 0$  <p style="text-align: center;">$t < 3 @ t > 5$</p>	1m 1m 1m	
(c)	<p>Minimum velocity, $a = 0$</p> $a = -8 + 2t = 0$ $t = 4$ $v = 15 - 8t + t^2$ $s = \int v dt = \int (15 - 8t + t^2) dt$ $s = 15t - 4t^2 + \frac{1}{3}t^3$ $s_4 = 15(4) - 4(4)^2 + \frac{1}{3}(4)^3$ $s_4 = 17\frac{1}{3}$	1m 1m 1m	10

SKEMA JAWAPAN KERTAS 2 (SET 2) JUJ 2016

14.	<p>(a) $\frac{120}{100} \times 97300$</p> <p style="padding-left: 20px;">$= RM116760$</p>	1m	
	<p style="padding-left: 20px;">$= RM116760$</p>	1m	
(b) (i)	<p>$x = \frac{408000}{340000} \times 100$</p> <p style="padding-left: 20px;">$= 120$</p>	1m	
(ii)	<p>$\frac{(120 \times 4) + (110 \times k) + (130 \times (5 - k)) + 150}{4 + 1 + k + 5 - k} = 124$</p> <p style="padding-left: 20px;">$k = 2$</p>	1m 1m	
(c)	<p>$\frac{168 + 154 + 182 + 210}{10}$</p> <p style="padding-left: 20px;">$= 71.4$</p>	1m 1m	
		1m	
			10
15.(a)	<p>$I : x + y \leq 160$</p> <p>$II : 50x \leq 60y$</p> <p>$III : y \leq x + 60$</p>	1m 1m 1m	
(b)	<p>Draw 1 line correctly</p> <p>Draw all line correctly</p> <p>Shaded and label R</p>	1m 1m 1m	
(c)(i)	<p>$50 \leq y \leq 100$</p>	1m	
(ii)	<p>$Profit = 60x + 80y$</p> <p style="padding-left: 20px;">$= 60(50) + 80(110)$</p> <p style="padding-left: 20px;">$RM 11,800.00$</p>	1m 1m 1m	
		1m	
		1m	
			10

SOALAN 8



SOALAN 15

