

**PRAKTIS BESTARI JUJ 2024  
MATEMATIK TAMBAHAN**

**PERATURAN PEMARKAHAN  
KERTAS 2 SET 2**

No	PEMARKAHAN		MARKAH	MARKAH PENUH
1	(a)	$\sqrt{(3)^2 + (14-p)^2} = 9$ dan selesaikan bentuk am persamaan kuadratik menggunakan kaedah rumus @ penyempurnaan kuasa dua	K1	
		22.49 , 5.515	N1	
	(b)	$3\binom{3}{4} - \binom{6}{22.49-2}$ $3\binom{3}{4} - \binom{6}{5.515-2}$ $\sqrt{3^2 + (-8.49)^2}$ $\sqrt{3^2 + (8.485)^2}$ $\frac{1}{9.004}\binom{3}{-8.49}$ $\frac{1}{9}\binom{3}{8.485}$	P1	
		$\sqrt{3^2 + (-8.49)^2}$ ATAU $\sqrt{3^2 + (8.485)^2}$	K1	
		$\frac{1}{9.004}\binom{3}{-8.49}$ ATAU $\frac{1}{9}\binom{3}{8.485}$	N1	
				<b>5</b>
2	(a)	$h^{-1}(x) = \frac{x-m}{5}$ ATAU $h(x) = \left(\frac{1}{2k}\right)x - \frac{1}{2k}$	K1	
		$2k = \frac{1}{5}$ @ $-\frac{m}{5} = 1$ ATAU $h(x) = 5x - 5$	K1	
		$k = \frac{1}{10}$ , $m = -5$	N1,N1	
	(b)	$h^{-1}(x) = 2\left(\frac{1}{10}\right)x + 1$	K1	
		$10\left(\frac{x+5}{5}\right)^2 - 1$ @ $10\left(\frac{1}{5}x + 1\right)^2 - 1$	K1	

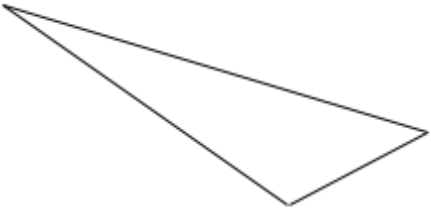
			$\frac{2}{5}x^2 + 4x + 9$	N1	
					<b>7</b>
<b>3</b>	(a)		$\frac{8}{a} = \frac{a+8}{8}$	K1	
			2	N1	
	(b)		$\frac{4(2^n - 1)}{2 - 1} \leq 500$ <i>atau setara / or equivalent</i>	K1	
			11	N1	
	(c)		$4(2)^{11-1}$	K1	
			4096	N1	
					<b>6</b>
<b>4</b>	(a)		$h'(x) = 3px^2 - 14x + 3$	K1	
			$h''(x) = 6px - 14$	K1	
			$6p(2) - 14 = 10$	K1	
			$p = 2$	N1	
	(b)		$\lim_{x \rightarrow -4} \frac{(x+4)(x-3)}{x+4}$	K1	
			-7	N1	
					<b>6</b>
<b>5</b>			$a + b - 3c = 3$ $a + 3b + c = 11$ $2a + 5b - 2c = 16$	N1	
			Ketiga-tiga persamaan betul	N1	
			Darab pekali untuk hapus 1 anu	K1	
			Hapus anu pertama	K1	
			Hapus anu kedua	K1	
			$a = 4 @ b = 2 @ c = 1$	N1	

			$a = 4$ DAN $b = 2$ DAN $c = 1$	N1																									
			RM7	N1																									
					<b>8</b>																								
<b>6</b>	(a)		$\sin x \cos 45^\circ + \cos x \sin 45^\circ = \cos x \cos 45^\circ + \sin x \sin 45^\circ$	P1																									
			$\frac{\sqrt{2}}{2}(\sin x + \cos x) = \frac{\sqrt{2}}{2}(\cos x + \sin x)$	P1																									
	(b)	(i)	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td><math>x</math></td> <td>0</td> <td><math>\frac{\pi}{6}</math></td> <td><math>\frac{\pi}{4}</math></td> <td><math>\frac{\pi}{3}</math></td> <td><math>\frac{\pi}{2}</math></td> <td><math>\frac{2}{3}\pi</math></td> <td><math>\frac{3}{4}\pi</math></td> <td><math>\frac{5}{6}\pi</math></td> <td><math>\pi</math></td> <td><math>\frac{7}{6}\pi</math></td> <td><math>\frac{5}{4}\pi</math></td> </tr> <tr> <td><math>y</math></td> <td>3</td> <td>1.5</td> <td>0</td> <td>-1.5</td> <td>-3</td> <td>-1.5</td> <td>0</td> <td>1.5</td> <td>3</td> <td>1.5</td> <td>0</td> </tr> </table>	$x$	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2}{3}\pi$	$\frac{3}{4}\pi$	$\frac{5}{6}\pi$	$\pi$	$\frac{7}{6}\pi$	$\frac{5}{4}\pi$	$y$	3	1.5	0	-1.5	-3	-1.5	0	1.5	3	1.5	0	N1	
$x$	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2}{3}\pi$	$\frac{3}{4}\pi$	$\frac{5}{6}\pi$	$\pi$	$\frac{7}{6}\pi$	$\frac{5}{4}\pi$																		
$y$	3	1.5	0	-1.5	-3	-1.5	0	1.5	3	1.5	0																		
			Kedua-dua paksi betul , skala seragam dan 1 titik diplot dengan betul	K1																									
			Kesemua titik diplot dengan betul	N1																									
			Graf licin	N1																									
		(ii)	Lukis garis lurus $y = \frac{2x}{\pi} - 2$	K1																									
			3	N1																									
					<b>8</b>																								
<b>7</b>	(a)		$\tan \angle ADG = \frac{14}{2}$	K1																									
			1.429	N1																									
	(b)		$AB = EF = 16 - \sqrt{200}$	P1																									
			$\sqrt{200}(1.429)$	K1																									
			$\frac{1}{2}(2\pi(14)) + 2(\sqrt{200}(1.429)) + 2(16 - \sqrt{200})$	K1																									
			88.13	N1																									
	(c)		$\frac{1}{2}(\sqrt{200})^2(1.429)$	K1																									

			$\frac{1}{2}(4)(14)$	K1															
			$\frac{1}{2}\pi(14)^2 - 2\left(\frac{1}{2}(\sqrt{200})^2(1.429)\right) + \frac{1}{2}(4)(14)$	K1															
			50.12	N1															
					<b>10</b>														
<b>8</b>	(a)		<table border="1"> <tr> <td><math>(x+1)</math></td> <td>3</td> <td>5</td> <td>7</td> <td>9</td> <td>11</td> <td>15</td> </tr> <tr> <td><math>\log_{10} y</math></td> <td>0.73</td> <td>0.63</td> <td>0.51</td> <td>0.40</td> <td>0.29</td> <td>0.07</td> </tr> </table>	$(x+1)$	3	5	7	9	11	15	$\log_{10} y$	0.73	0.63	0.51	0.40	0.29	0.07	N1 N1	
$(x+1)$	3	5	7	9	11	15													
$\log_{10} y$	0.73	0.63	0.51	0.40	0.29	0.07													
	(b)		Rujuk Graf pada lampiran 2 Paksi-paksi betul, skala seragam dan sekurang-kurangnya 1 titik diplot betul.	K1															
			Semua 6 titik diplot dengan betul.	N1															
			Garis lurus penyuaian terbaik dilukis [Sekurang-kurangnya 5 titik diplot]	N1															
	(c)		$\log_{10} y = -\log_{10} s(x+1) + \log_{10} r$	P1															
			$\log_{10} r = 0.9$	K1															
			$r = 7.943$	N1															
			$-\log_{10} s = *m$	K1															
			$s = 1.136$	N1															
					<b>10</b>														
<b>9</b>	(a)		$2KL = KM$	P1															
			$2\sqrt{(x-(-2))^2 + (y-0)^2} = \sqrt{(x-4)^2 + (x-0)^2}$	K1															
			$x^2 + y^2 + 8x = 0$	N1															
	(b)		$x^2 + (2x+4)^2 + 8x = 0$	K1															
			$(5x+4)(x+4) = 0$ selesaikan persamaan kuadratik $x = -\frac{4}{5}, x = -4$	K1															

			$P\left(-\frac{4}{5}, \frac{12}{5}\right)$ <b>DAN</b> $Q(-4, -4)$	N1	
	(c)		$2m_2 = -1$	K1	
			$y - (-4) = -\frac{1}{2}(x - (-4))$	K1	
			$\frac{1}{2}\left[-6(-4) + (-4)\left(\frac{12}{5}\right) + \left(-\frac{4}{5}\right)(0) - \left(0(-4) + (-4)\left(-\frac{4}{5}\right) + \frac{12}{5}(-6)\right)\right]$	K1	
			$\frac{128}{5}$	K1	
					<b>10</b>
<b>10</b>	(a)	(i)	${}^5C_4\left(\frac{2}{3}\right)^4\left(\frac{1}{3}\right)^1$	K1	
			$\frac{80}{243} // 0.3292$	N1	
		(ii)	${}^5C_3\left(\frac{1}{3}\right)^3\left(\frac{2}{3}\right)^2$ ATAU ${}^5C_4\left(\frac{1}{3}\right)^4\left(\frac{2}{3}\right)^1$ ATAU ${}^5C_5\left(\frac{1}{3}\right)^5\left(\frac{2}{3}\right)^0$ ATAU ${}^5C_2\left(\frac{2}{3}\right)^2\left(\frac{1}{3}\right)^2$ ATAU ${}^5C_1\left(\frac{2}{3}\right)^1\left(\frac{1}{3}\right)^4$ ATAU ${}^5C_0\left(\frac{2}{3}\right)^0\left(\frac{1}{3}\right)^5$	K1	
			${}^5C_3\left(\frac{1}{3}\right)^3\left(\frac{2}{3}\right)^2 + {}^5C_4\left(\frac{1}{3}\right)^4\left(\frac{2}{3}\right)^1 + {}^5C_5\left(\frac{1}{3}\right)^5\left(\frac{2}{3}\right)^0$ ATAU ${}^5C_2\left(\frac{2}{3}\right)^2\left(\frac{1}{3}\right)^3 + {}^5C_1\left(\frac{2}{3}\right)^1\left(\frac{1}{3}\right)^4 + {}^5C_0\left(\frac{2}{3}\right)^0\left(\frac{1}{3}\right)^5$	K1	
			$\frac{17}{81} // 0.2099$	N1	
	(b)	(i)	$P\left(Z > \frac{2.28 - 2}{0.3}\right)$	K1	
			17.54%	N1	
		(ii)	$P\left(Z < \frac{m - 2}{0.3}\right) = 0.15$	K1	

		$\frac{m-2}{0.3} = -1.036$	K1	
		$m = 1.689$	N1	
				<b>10</b>
<b>11</b>	(a)	Bezakan $y$ terhadap $x$ DAN Ganti $R(1,3)$ ke dalam $\frac{dy}{dx}$ $\frac{dy}{dx} = -2x$ DAN $3 = -2(1) + c$	K1	
		$m = -2$ dan $c = 5$	N1	
	(b)	Kamir $(4 - x^2)$ terhadap $x$ DAN Guna had $\int_0^1$ ke dalam kamirannya $\left[4x - \frac{x^3}{3}\right]$ DAN $A_1 = \left[\left(4(1) - \frac{(1)^3}{3}\right) - \left(4(0) - \frac{(0)^3}{3}\right)\right]$	K1	
		<u>Guna rumus luas trapezium</u> $A_2 = \frac{1}{2} \times (5+3) \times 1$	K1	
		<u>Luas kawasan berwarna, <math>A_2 - A_1</math></u> $\left[\frac{1}{2} \times (5+3) \times 1\right] - \left[\left(4(1) - \frac{(1)^3}{3}\right) - \left(4(0) - \frac{(0)^3}{3}\right)\right]$	K1	
		$\frac{1}{3}$	N1	
	(c)	Kamir $(4 - y)$ terhadap $y$ DAN Guna had $\int_0^4$ ke dalam kamirannya $\pi \left[4y - \frac{y^2}{2}\right]$ DAN $V_1 = \pi \left[\left(4(4) - \frac{(4)^2}{2}\right) - \left(4(0) - \frac{(0)^2}{2}\right)\right]$	K1	

			Guna rumus isipadu kon $V_2 = \frac{1}{3}\pi\left(\frac{5}{2}\right)^2(5)$	K1	
			Isipadu kawasan berwarna = $\frac{1}{2}(V_2 - V_1)$ $\frac{1}{2}\pi\left(\frac{125}{12} - 8\right)$	K1	
			$\frac{29}{24}\pi$	N1	
					<b>10</b>
<b>12</b>	(a)		$\frac{\sqrt{10^2 + 4^2} @ \sqrt{5^2 + 4^2} @ \sqrt{10^2 + 5^2} @ 10.77 + 6.403 + 11.18}{2}$	P1	
			$\sqrt{14.18(14.18 - 10.77)(14.18 - 6.403)(14.18 - 11.18)}$	K1	
			33.588	N1	
	(b)		$11.18^2 = 10.77^2 + 6.403^2 - 2(10.77)(6.403)\cos C$	K1	
			76.58	N1	
	(c)	(i)		K1	
		(ii)	103.42°	N1	
		(iii)	$\frac{\sin B}{6.403} = \frac{\sin 103.42}{11.18}$	K1	
			$\frac{1}{2}(6.403)(11.18)\sin 42.73^\circ$	K1	
			24.29	N1	
					<b>10</b>
<b>13</b>	(a)	(i)	$t = \frac{p}{2q}$	P1	

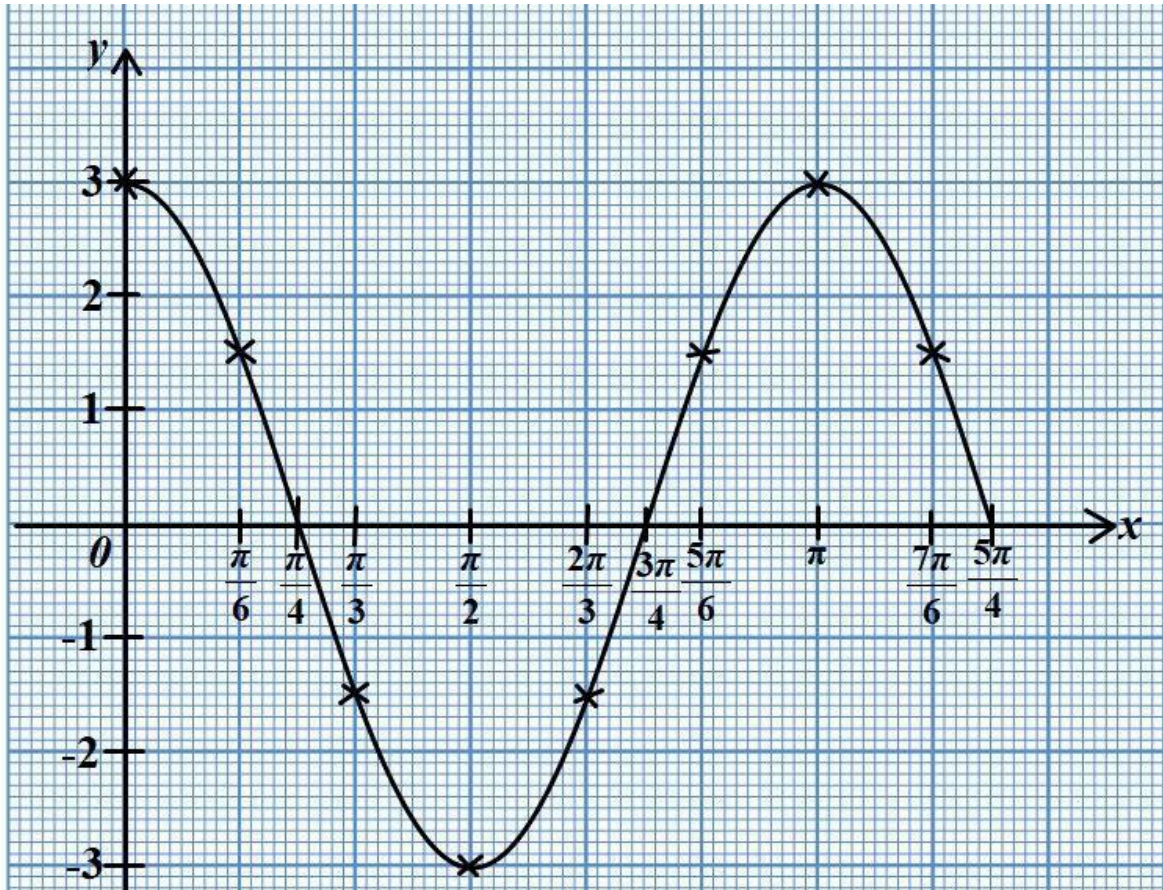
			Gantikan $t = \frac{p}{2q}$ ke dalam $V$	K1	
			Kamirkan $\int V dt$ DAN Gantikan $S = 24$ dan $t = 3$ kedalam $S$	K1	
			$p^2 = 16q$ dan $p = 2q$	N1	
			Selesaikan persamaan serentak	K1	
			$p = 8$ dan $q = 4$	N1	
		(ii)	$a < 0$	K1	
			$t > 1$ s	N1	
	(b)				
			bentuk	N1	
			Titik (1,12) dan (3,-4) DAN (0,8)	N1	
					<b>10</b>
<b>14</b>	(a)	(i)	$12x + 15y \leq 1800$	N1	
			$x > 16$	N1	
			$y - x \geq 15$	N1	
	(b)		Sekurang – kurangnya satu garis dilukis dengan betul mengikut ketaksamaan yang melibatkan $x$ dan $y$	K1	
			3 garis ketaksamaan dilukis dengan betul	K1	
			Rantau dilorek dengan betul	N1	



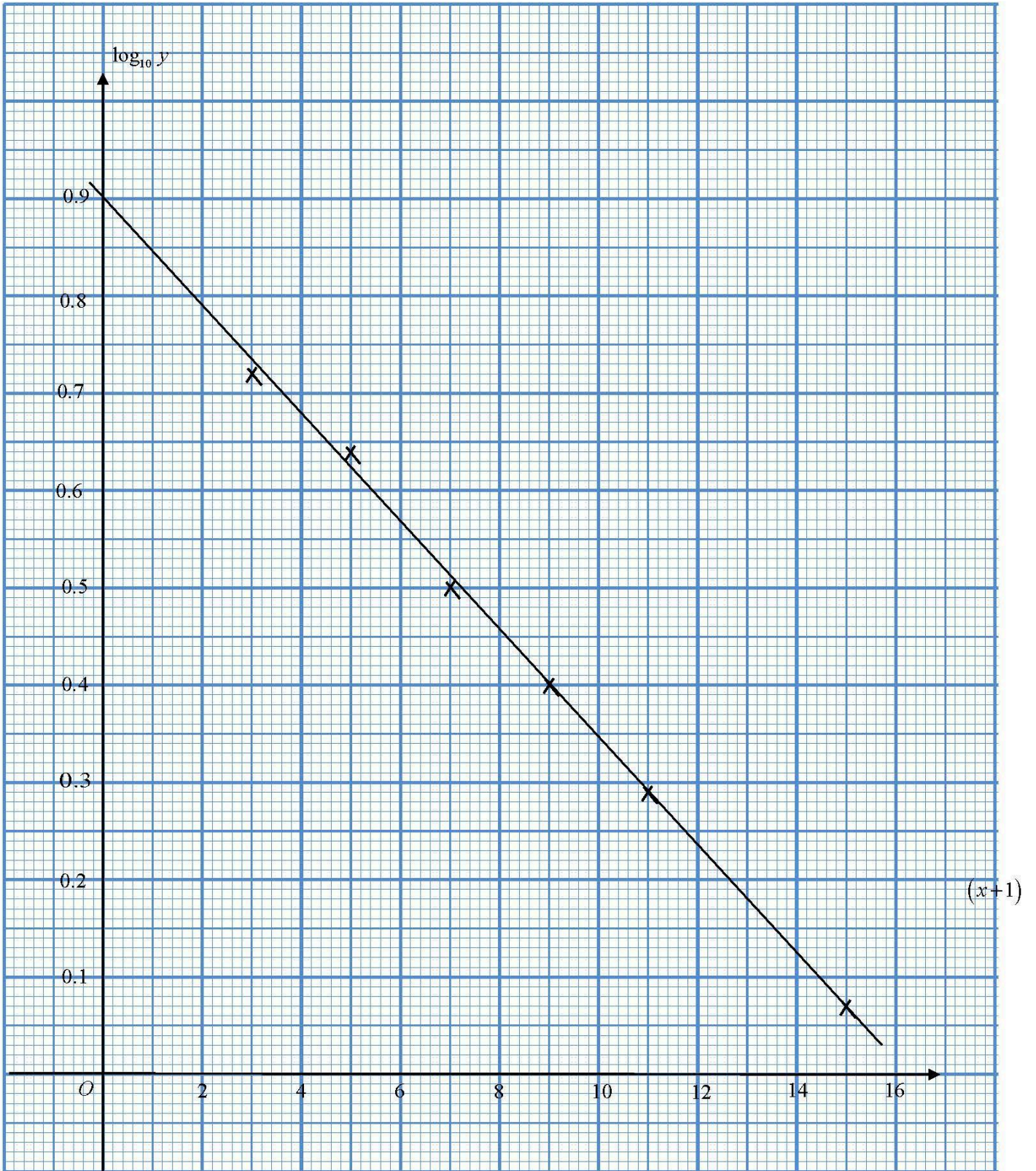
	(c)	(i)	$x = 55$	N1	
		(ii)	(17,32)	N1	
			$12(17) + 15(32)$	K1	
			684	N1	
					<b>10</b>

15	(a)	$\frac{54}{Q_{2018}} \times 100 = 135$	K1	
		RM40	N1	
	(b)	$\frac{20}{100} \times 32$	K1	
		RM6.40	N1	
	(c)	$\frac{135(4)+120(x)+88(5)+130(x+2)}{4+x+5+x+2} = 116$	K1	
		$x = 2$	N1	
	(d)	$\frac{137.5}{100} \times 130$	K1	
		178.75	NI	
		$\frac{135(4)+120(2)+88(5)+178.75(4)}{4+2+5+2+2}$	K1	
		129	N1	
				<b>10</b>

Graf untuk Soalan 6  
Graf for Question 6



Kertas graf untuk Soalan 8  
 Graph paper for Question 8



JAWAPAN SOALAN NO 14 SET 2

