

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)		$3\left(\frac{3}{4}\right) - \left(\frac{6}{22.49 - 2}\right)$ $3\left(\frac{3}{4}\right) - \left(\frac{6}{5.515 - 2}\right)$ $\sqrt{3^2 + (-8.49)^2}$ $\sqrt{3^2 + (8.485)^2}$ $\frac{1}{9.004}\left(\frac{3}{-8.49}\right)$ $\frac{1}{9}\left(\frac{3}{8.485}\right)$	P1	
			$\sqrt{3^2 + (-8.49)^2}$ ATAU $\sqrt{3^2 + (8.485)^2}$	K1	
			$\frac{1}{9.004}\left(\frac{3}{-8.49}\right)$ ATAU $\frac{1}{9}\left(\frac{3}{8.485}\right)$	N1	
					5
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	

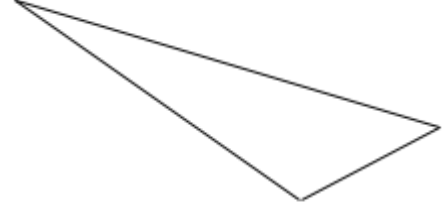
			$\frac{2}{5}x^2 + 4x + 9$	N1	
					7
3	(a)		$\frac{8}{a} = \frac{a+8}{8}$	K1	
			2	N1	
	(b)		$\frac{4(2^n - 1)}{2 - 1} \leq 500$ <i>atau setara / or equivalent</i>	K1	
			11	N1	
	(c)		$4(2)^{11-1}$	K1	
			4096	N1	
					6
4	(a)		$h'(x) = 3px^2 - 14x + 3$	K1	
			$h''(x) = 6px - 14$	K1	
			$6p(2) - 14 = 10$	K1	
			$p = 2$	N1	
	(b)		$\lim_{x \rightarrow -4} \frac{(x+4)(x-3)}{x+4}$	K1	
			-7	N1	
					6
5			$a + b - 3c = 3$ $a + 3b + c = 11$ $2a + 5b - 2c = 16$	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	

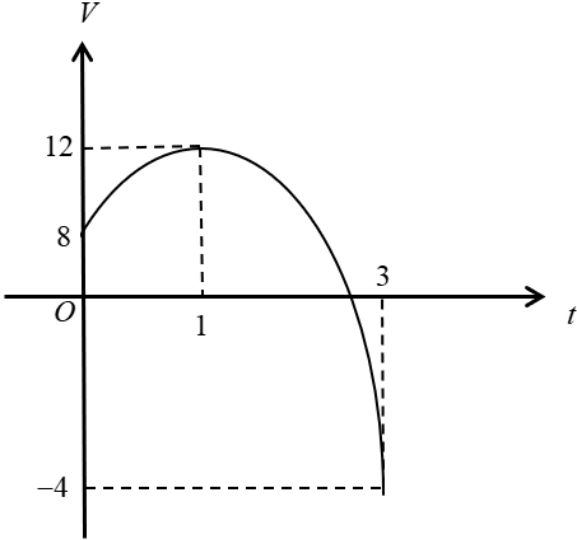
			$a = 4$ DAN $b = 2$ DAN $c = 1$	N1																									
			RM7	N1																									
					8																								
6	(a)		$\sin x \cos 45^\circ + \cos x \sin 45^\circ = \cos x \cos 45^\circ + \sin x \sin 45^\circ$	P1																									
			$\frac{\sqrt{2}}{2}(\sin x + \cos x) = \frac{\sqrt{2}}{2}(\cos x + \sin x)$	P1																									
	(b)	(i)	<table><tr><td>x</td><td>0</td><td>$\frac{\pi}{6}$</td><td>$\frac{\pi}{4}$</td><td>$\frac{\pi}{3}$</td><td>$\frac{\pi}{2}$</td><td>$\frac{2}{3}\pi$</td><td>$\frac{3}{4}\pi$</td><td>$\frac{5}{6}\pi$</td><td>π</td><td>$\frac{7}{6}\pi$</td><td>$\frac{5}{4}\pi$</td></tr><tr><td>y</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	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2}{3}\pi$	$\frac{3}{4}\pi$	$\frac{5}{6}\pi$	π	$\frac{7}{6}\pi$	$\frac{5}{4}\pi$	y	3	1.5	0	-1.5	-3	-1.5	0	1.5	3	1.5	0	N1	
x	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2}{3}\pi$	$\frac{3}{4}\pi$	$\frac{5}{6}\pi$	π	$\frac{7}{6}\pi$	$\frac{5}{4}\pi$																		
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																									
					8																								
7	(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															
					10														
8	(a)		<table><tr><td>$(x+1)$</td><td>3</td><td>5</td><td>7</td><td>9</td><td>11</td><td>15</td></tr><tr><td>$\log_{10} y$</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															
					10														
9	(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															

			$P\left(-\frac{4}{5}, \frac{12}{5}\right)$ DAN $Q(-4, -4)$	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	
					10
10	(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	
					10
11	(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	
			Guna rumus luas trapezium $A_2 = \frac{1}{2} \times (5 + 3) \times 1$	K1	
			Luas kawasan berwarna, $A_2 - A_1$ $\left[\frac{1}{2} \times (5 + 3) \times 1 \right] - \left[\left(4(1) - \frac{(1)^3}{3} \right) - \left(4(0) - \frac{(0)^3}{3} \right) \right]$	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	

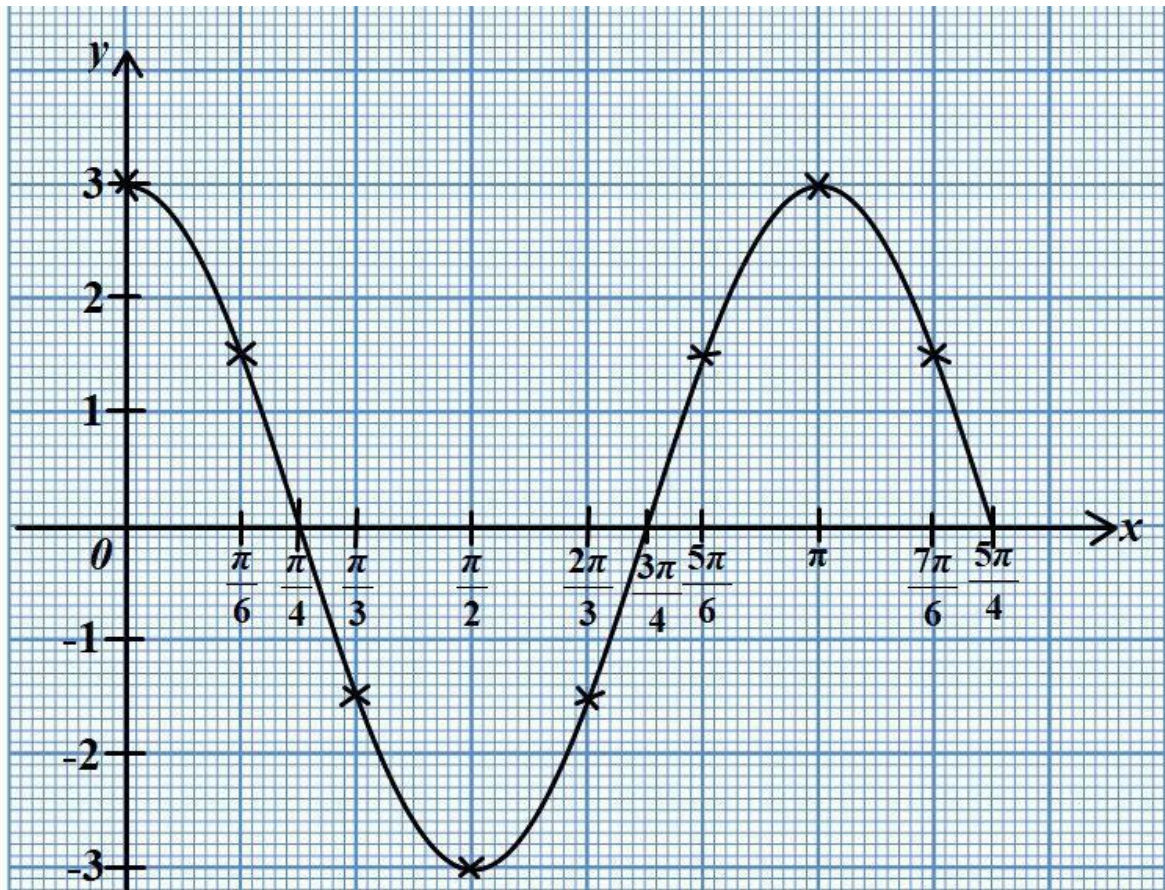
			<u>Guna rumus isipadu kon</u> $V_2 = \frac{1}{3}\pi\left(\frac{5}{2}\right)^2(5)$	K1	
			<u>Isipadu kawasan berwarna = $\frac{1}{2}(V_2 - V_1)$</u> $\frac{1}{2}\pi\left(\frac{125}{12} - 8\right)$	K1	
			$\frac{29}{24}\pi$	N1	
					10
12	(a)		$\frac{\sqrt{10^2 + 4^2} @ \sqrt{5^2 + 4^2} @ \sqrt{10^2 + 5^2} @ 10.77 + 6.403 + 11.18}{2}$	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	
					10
13	(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	
					10
14	(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	

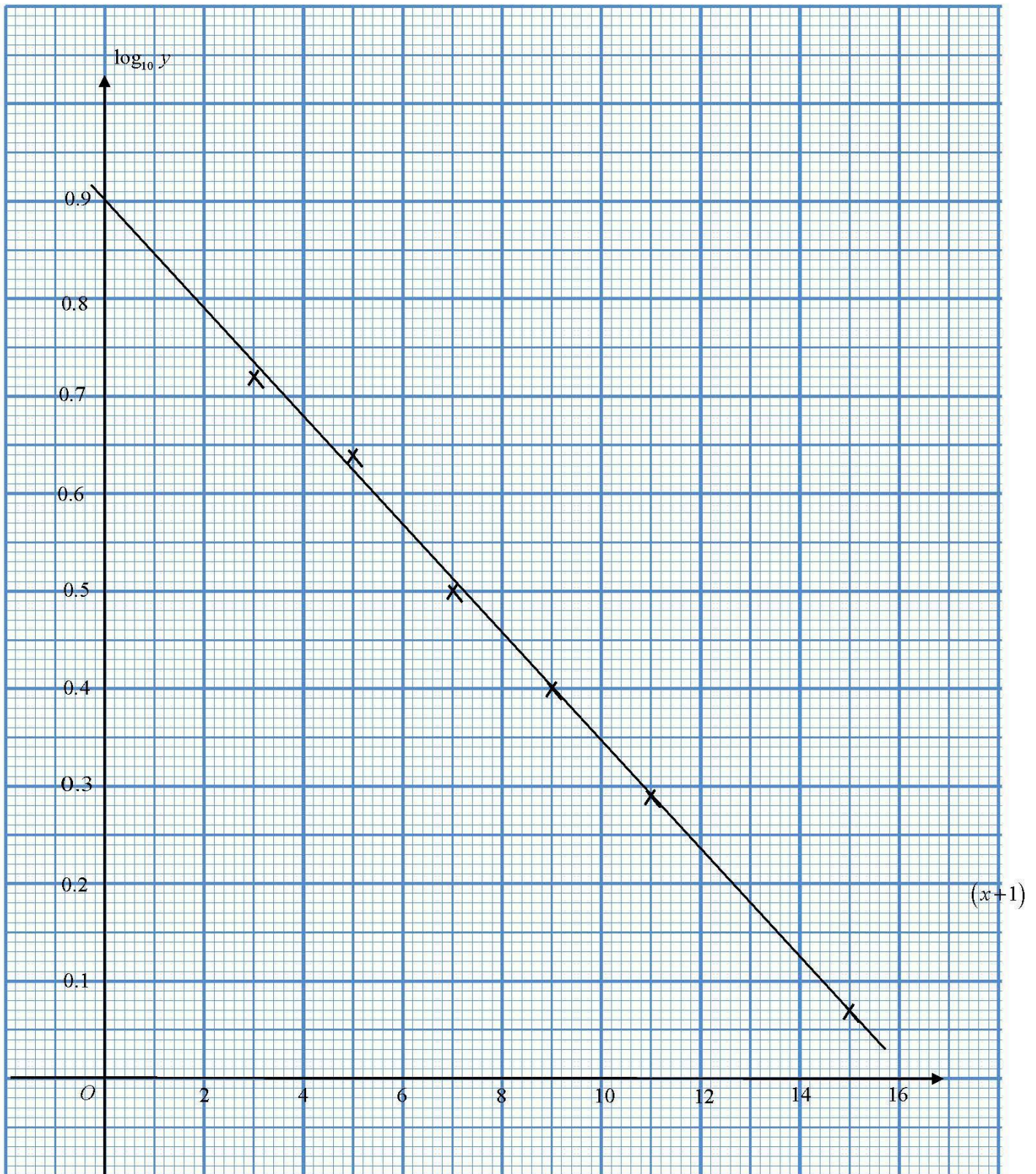
	(c)	(i)	$x = 55$	N1	
		(ii)	(17, 32)	N1	
			$12(17) + 15(32)$	K1	
			684	N1	
					10

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	
					10

Graf untuk Soalan 6
Graf for Question 6



Kertas graf untuk Soalan 8
Graph paper for Question 8



JAWAPAN SOALAN NO 14 SET 2

