

**PRAKTIS BESTARI JUJ 2025
MATEMATIK TAMBAHAN**

PERATURAN PEMARKAHAN

KERTAS 2 SET 1

No	PEMARKAHAN			MARKAH	MARKAH PENUH
1			Guna mana-mana kaedah (penghapusan/penggantian) bagi menghapuskan satu pembolehubah.	K1	
			Guna mana-mana kaedah (penghapusan/penggantian) bagi menghapuskan pembolehubah kedua.	K1	
			$x = 5$	N1	
			$y = -9$	N1	
			$z = -6$	N1	
					5
2	(a)		$g(x) = \frac{x+1}{2}$	N1	
	(b)	(i)	$x = 2y - 1$ OR $g^{-1}(x) = 2x - 1$	K1	
			$f(y) = (2y - 1)^2 + 2(2y - 1) + 4$ OR $f(x) = (2x - 1)^2 + 2(2x - 1) + 4$	K1	
			$f(x) = 4x^2 + 3$	N1	
		(ii)	$4x^2 + 3 = 19$	K1	
			$x = \pm\sqrt{2}$	N1	
					6
3	(a)		$\frac{1}{2} \times 6^2 \times \theta$ or $\frac{1}{2} \times 4^2 \times \theta$	K1	
			$\left(\frac{1}{2} \times 6^2 \times \theta\right) - \left(\frac{1}{2} \times 4^2 \times \theta\right) = 11.25$	K1	
			1.125 @ $\frac{9}{8}$	N1	
	(b)		6×1.125 or 4×1.125 @ $6 \times \frac{9}{8}$ or $4 \times \frac{9}{8}$	K1	

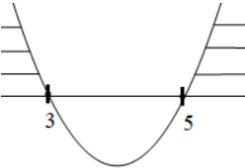
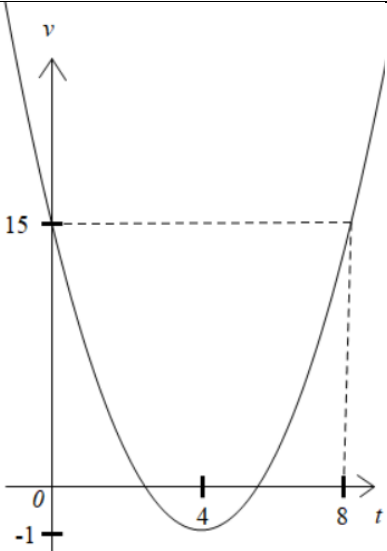
			$2 + 2 + (4 \times 1.125) + (6 \times 1.125)$ $@ 2 + 2 + \left(6 \times \frac{9}{8}\right) + \left(6 \times \frac{9}{8}\right)$	K1	
			$15.25 @ \frac{61}{4}$	N1	
					6
4	(a)	(i)	$2 \times m_2 = -1$ & Ganti $(-1,1)$ ke dalam $y = -\frac{1}{2}x + c$ & Selesaikan untuk c OR $2 \times m_2 = -1$ & Ganti $(-1,1)$ ke dalam $(y - y_1) = -\frac{1}{2}(x - x_1)$	K1	
			Selesaikan persamaan linear serentak sama ada menggunakan penghapusan atau penggantian.	K1	
			$(3, -1)$	N1	
		(ii)	$\frac{1}{2} [6(1) + (-1)(-1) + 3(5)] - [-1(5) + 3(1) + 6(1)]$	K1	
			$2 \times \frac{1}{2} [6(1) + (-1)(-1) + 3(5)] - [-1(5) + 3(1) + 6(1)]$	K1	
			30	N1	
	(b)		$\sqrt{(x-6)^2 + (y-5)^2} = 5$	K1	
			$x^2 + y^2 - 12x - 10y + 36 = 0$	N1	
					8
5	(a)	(i)	$\alpha + \beta = \frac{-q}{p}$ DAN $\alpha\beta = \frac{-3}{p}$	P1	
			$\alpha^2\beta + \beta^2\alpha = \frac{3q}{p^2}$	N1	
		(ii)	$6\alpha + 6\beta = \frac{-6q}{p}$ DAN $36\alpha\beta = \frac{-108}{p}$	K1	
			$px^2 + 6qx - 108 = 0$	N1	
	(b)	(i)	$(6, 0)$ DAN $(-2, 0)$	N1	
		(ii)	$f(x) = -3 \left(x^2 - 4x + \left(\frac{-4}{2}\right)^2 - \left(\frac{-4}{2}\right)^2 - 12 \right)$	K1	

			$f(x) = 3(x-2)^2 - 48$	N1	
			$g(x) = 3(x+2)^2 - 48$	N1	
					8
6	(a)		$(3-2x)(8-2x)(x)$	P1	
			$V = 4x^3 - 22x^2 + 24x$	N1	
	(b)		$\frac{dv}{dx} = 12x^2 - 44x + 24$	K1	
			$12x^2 - 44x + 24 = 0$ dan $(3x-2)(x-3) = 0$	K1	
			$4\left(\frac{2}{3}\right)^3 - 22\left(\frac{2}{3}\right)^2 + 24\left(\frac{2}{3}\right)$	K1	
			7.407	N1	
	(c)		$\delta v = [12(1)^2 - 44(1) + 24] \times 0.09$	K1	
			$\delta v = -0.72$	N1	
	(d)		$0.1 = [12(0.5)^2 - 44(0.5) + 24] \times \frac{dx}{dt}$ atau setara	K1	
			0.02	N1	
					10
7	(a)		$\frac{2\left(\frac{\sin x}{\cos x}\right)}{\sec^2 x} @ \frac{2\left(\frac{\sin x}{\cos x}\right)}{1+\left(\frac{\sin x}{\cos x}\right)^2}$	K1	
			$\sin 2x$	N1	
	(b)		$\sin 2x = -\frac{\sqrt{3}}{2}$	P1	
			$2x = \frac{4}{3}\pi$	N1	
			$x = \frac{2\pi}{3}, \frac{5\pi}{6}, \frac{5\pi}{3}, \frac{11\pi}{6}$	N1	
	(c)		$\sin x = -\frac{\sqrt{3}}{2}$	P1	

			$x = \frac{4\pi}{3}, \frac{5\pi}{3}$	N1	
					7
8	(a)	(i)	0.475	N1	
		(ii)	${}^6C_r (0.475)^r (0.525)^{6-r}, 0 \leq r \leq 6$ OR ${}^6C_r (0.525)^r (0.475)^{6-r}, 0 \leq r \leq 6$	K1	
			${}^6C_2 (0.475)^2 (0.525)^4 + {}^6C_3 (0.475)^3 (0.525)^3 + {}^6C_4 (0.475)^4 (0.525)^2 + {}^6C_5 (0.475)^5 (0.525)^1 + {}^6C_6 (0.475)^6 (0.525)^0$ @ $1 - {}^6C_0 (0.475)^0 (0.525)^6 - {}^6C_1 (0.475)^1 (0.525)^5$ OR ${}^6C_0 (0.525)^0 (0.475)^6 + {}^6C_1 (0.525)^1 (0.475)^5 + {}^6C_2 (0.525)^2 (0.475)^4 + {}^6C_3 (0.525)^3 (0.475)^3 + {}^6C_4 (0.525)^4 (0.475)^2 + {}^6C_5 (0.525)^5 (0.475)^1 + {}^6C_6 (0.525)^6 (0.475)^0$	K1	
			0.8654	N1	
	(b)	(i)	$1 - P\left(Z > \frac{60-55}{4}\right) \&$ $1 - 0.1056$	K1	
			0.8944	N1	
		(ii)	$P\left(Z > \frac{k-55}{4}\right) = 0.2680$	P1	
			$z = 0.619$	P1	
			$\frac{k-55}{4} = 0.619$	K1	
			57.4	N1	
					10
9	(a)		$p = 3$	P1	
			$\frac{dy}{dx} = -2(3)(2x-1)^{-3}(2)$	K1	
			$\frac{dy}{dx} = \frac{-12}{(2(0)-1)^3}$	K1	

			$y = 12x + 3$	N1	
	(b)	(i)	$\frac{3(2x-1)^{-1}}{2(-1)}$	K1	
			$\left[-\frac{3}{2(2(-1)-1)} \right] - \left[-\frac{3}{2(2(-3)-1)} \right]$	K1	
			$\frac{2}{7}$	N1	
		(ii)	$y = 9(2x-1)^{-4}$	K1	
			$\frac{9\pi}{4} \left(\left[\frac{(2(-1)-1)^{-3}}{2(-3)} \right] - \left[\frac{(2(-3)-1)^{-3}}{2(-3)} \right] \right)$	K1	
			$\frac{79}{6174} \pi$ or 0.01280π	N1	
					10
10	(a)		$\overrightarrow{QS} = \overrightarrow{QP} + \overrightarrow{PS}$ atau setara @ $\overrightarrow{PT} = \overrightarrow{PQ} + \overrightarrow{QT}$ atau setara	P1	
			$\overrightarrow{QS} = -10\hat{u} + 25\hat{v}$	N1	
			$\overrightarrow{PT} = 6\hat{u} + 10\hat{v}$	N1	
	(b)	(i)	$\overrightarrow{PT} = \lambda \overrightarrow{PR}$ atau setara @ $\overrightarrow{PT} = \lambda \overrightarrow{TR}$ atau setara	P1	
			Bandingkan pekali $\hat{u}$ dan $\hat{v}$	K1	
			$\overrightarrow{PT} = \frac{2}{3} \overrightarrow{PR}$ atau setara @ $\overrightarrow{PT} = 2\overrightarrow{TR}$ atau setara	K1	
			2:1	N1	
		(ii)	$\frac{\frac{1}{2} \times \overrightarrow{PR} \times h}{\frac{1}{2} \times \overrightarrow{TR} \times h}$ OR $\frac{1}{2} \times \overrightarrow{PR} \times h = 6.05$	P1	
			$\frac{\frac{1}{2} \times (\overrightarrow{PR}) \times h}{\frac{1}{2} \times \left(\frac{1}{3} \overrightarrow{PR} \right) \times h} = \frac{6.05}{x}$ atau setara @	K1	

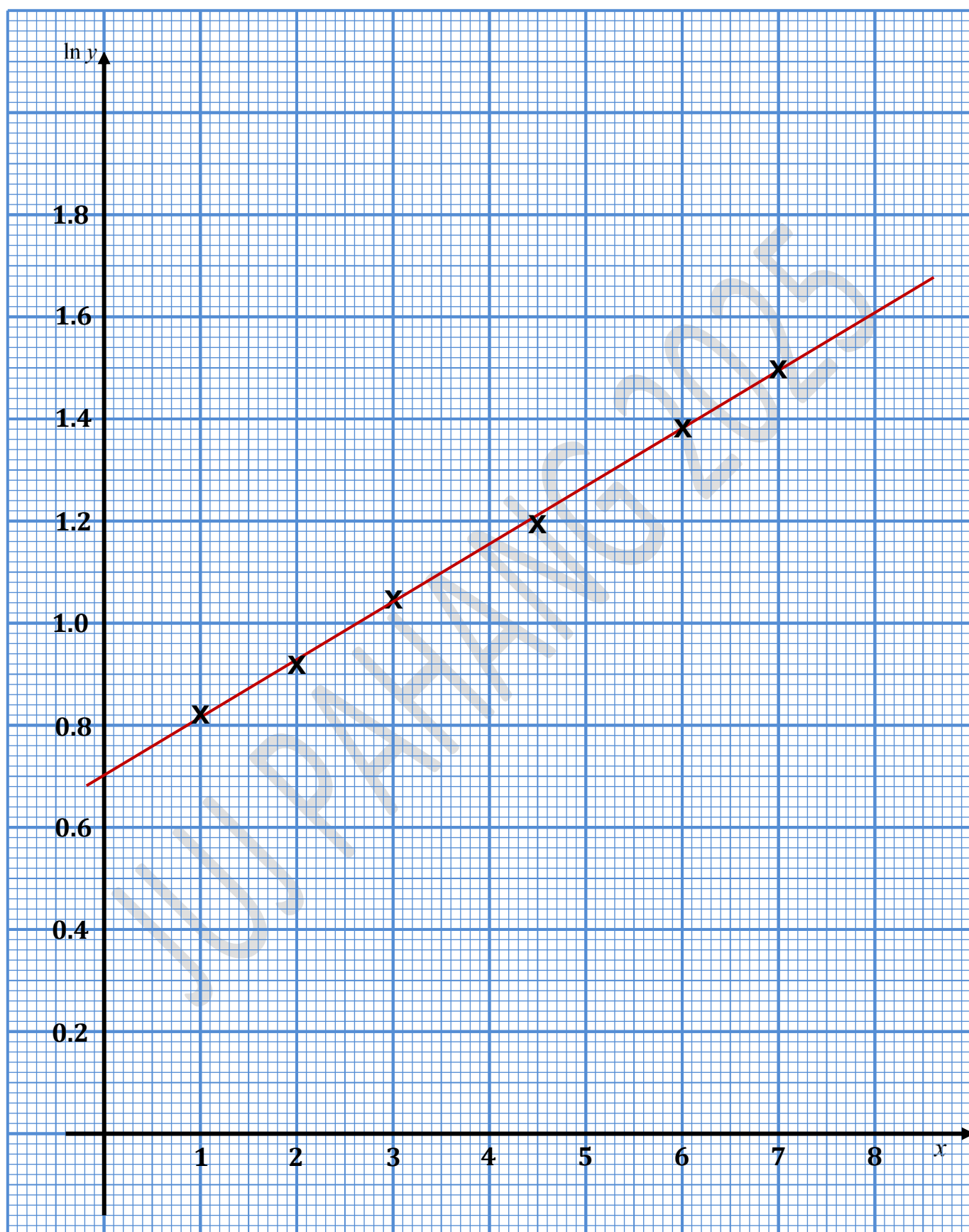
			$\frac{\frac{1}{2} \times (3 \overline{TR}) \times h}{\frac{1}{2} \times \overline{TR} \times h} = \frac{6.05}{x} \text{ atau setara}$ OR $\frac{1}{2} \times \left(\frac{1}{3} \times \frac{6.05}{\frac{1}{2}h} \right) \times h$								
			$2.017 @ \frac{121}{60}$							N1	
										10	
11	(a)		ln y	0.82	0.92	1.05	1.20	1.38	1.50	N1	
	(b)		Rujuk Graf pada lampiran Paksi-paksi betul, skala seragam dan sekurang-kurangnya 1 titik diplot betul.							K1	
			Semua 6 titik diplot dengan betul.							N1	
			Garis lurus penyuuaian terbaik dilukis [Sekurang-kurangnya 5 titik diplot]							N1	
	(c)	(i)	3.004							N1	
		(ii)	$\ln y = -\ln b(x) + \ln a$							P1	
			$\ln a = *c$							K1	
			$a = 2.014$							N1	
		(iii)	$-\ln b = *m$							K1	
			$b = 0.8929$							N1	
										10	
12	(a)	(i)	$t = 4$							P1	
			$v = t^2 - 8t + 15$							K1	
			-1							N1	
		(ii)	$(t - 3)(t - 5) > 0$ dan							K1	

					
			$0 < t < 3, t > 5$	N1	
	(b)		 Bentuk U dengan paksi yang betul Titik minimum (4, -1), titik (0, 15) dan titik (8, 15)	P1	
				N1	
	(c)		$S = \frac{t^3}{3} - 4t^2 + 15t$	K1	
			$\left(\frac{(3)^3}{3} - 4(3)^2 + 15(3) \right) - \left(\frac{(2)^3}{3} - 4(2)^2 + 15(2) \right)$	K1	
			1.333 or $\frac{4}{3}$	N1	
					10
13	(a)		$PR^2 = (26)^2 + (19)^2 - 2(26)(19)\cos 72^\circ$	K1	
			$PR = 27.05 \text{ cm}$	N1	
	(b)	(i)	$\frac{\sin \angle WYZ}{27.05} = \frac{\sin 50^\circ}{22}$	K1	
			70.37° 109.63°	N1 N1	
		(ii)	$\frac{YZ}{\sin 59.63^\circ} = \frac{22}{\sin 50^\circ}$ OR $(YZ)^2 = 22^2 + 27.05^2 - 2(22)(27.05)\cos 59.63^\circ$	K1	

			24.78 cm	N1	
		(iii)	$\frac{1}{2}(26)(19)\sin 72^\circ$ or $\frac{1}{2}(27.05)(24.78)\sin 50^\circ @ \frac{1}{2}(22)(24.78)\sin 70.37^\circ @$ $\frac{1}{2}(22)(27.05)\sin 59.63^\circ$	K1	
			$\frac{1}{2}(26)(19)\sin 72^\circ + \frac{1}{2}(27.05)(24.78)\sin 50^\circ$ or $\frac{1}{2}(26)(19)\sin 72^\circ + \frac{1}{2}(22)(24.78)\sin 70.37^\circ @$ $\frac{1}{2}(26)(19)\sin 72^\circ + \frac{1}{2}(22)(27.05)\sin 59.63^\circ$	K1	
			491.65 @ 491.63	N1	
					10
14	(a)	(i)	$\frac{125P_{2024}}{100} = a$	K1	
			$\frac{4a}{5}$	N1	
		(ii)	$\frac{4a}{5} = 116.92$	K1	
			$\frac{9.50}{P_{2020}} \times 100 = 146.15$	K1	
			RM6.50	N1	
	(b)	(i)	$\frac{125(4) + 116(2) + x(6)}{4 + 2 + 6} = 124.5$	K1	
			127	N1	
		(ii)	$\frac{P_{2022}}{47.40} \times 100 = 124.5$	K1	
			RM59.01	N1	
			RM59.01 < RM60.00, Hadi mampu membeli beg tersebut.	N1	
					10
15	(a)		$m = 18$ dan $n = 3$	N1	
	(b)		$y \leq 2x$	N1	

			Lukis garis lurus $y = 2x$	K1	
			Rantau di label R	N1	
	(c)	(i)	$y = \frac{5}{3}x$	N1	
			6	N1	
		(ii)	$k = 12.50x + 10.00y$	N1	
			Lukis garis fungsi objektif	K1	
			Gantikan (13,4) kedalam $k = 12.50x + 10.00y$	K1	
			202.50	N1	
					10

Graf Nombor 11



Graf Nombor 15

