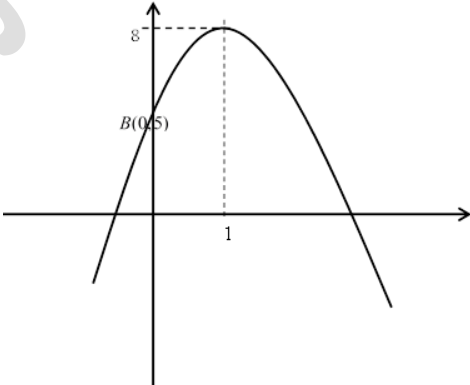


PRAKTIS BESTARI JUJ 2025
MATEMATIK TAMBAHAN

PERATURAN PEMARKAHAN

KERTAS 2 SET 2

No	PEMARKAHAN			MARKAH	MARKAH PENUH
1	(a)		$x = 5y - 5$	K1	
			$h(x) = 10x - 4$	N1	
	(b)		$f^{-1}(x) = \frac{x+2}{3}$	K1	
			$\frac{\left(\frac{x}{5} + 1\right) + 2}{3}$	K1	
			$\frac{x}{15} + 1$	N1	
					5
2	(a)		$f(x) = -3 \left(x^2 - \frac{h}{3}x + \left(\frac{-h}{2}\right)^2 - \left(\frac{-h}{2}\right)^2 - \frac{11}{3} + \frac{h}{3} \right)$	K1	
			$f(x) = -3 \left(x - \frac{h}{6} \right)^2 + \frac{h^2}{12} + 11 - h$	N1	
			Selesaikan $\frac{h^2}{12} - h + 11 = 8$	K1	
			$h = 6, r = 1$	N1	
	(b)		$f(x) = -3x^2 + 6x + 5$ 		

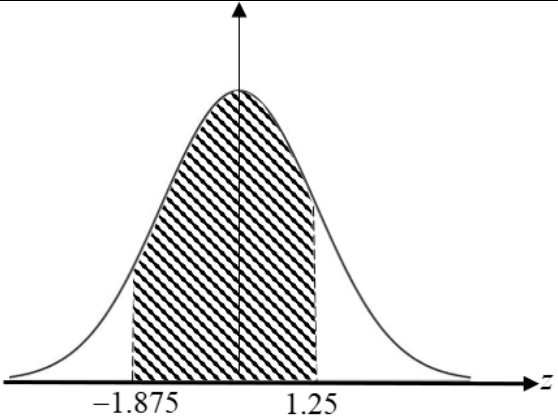
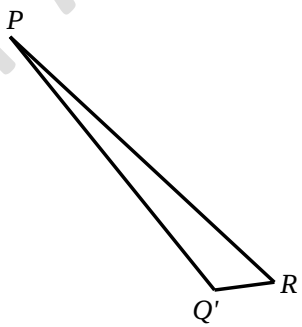
No	PEMARKAHAN			MARKAH	MARKAH PENUH
			Bentuk – U DAN Paksi- x , Paksi- y dilukis dengan pembaris	P1	
			Titik maksimum (1, 8) DAN 2 titik lain (1 titik di kanan, 1 titik di kiri titik maksimum) DAN titik asalan, paksi- x dan paksi- y dilabel.	P1	
	(c)		Graf bergerak ke kiri	N1	
					7
3	(a)		$\vec{OA} = -4\hat{i} - 7\hat{j}$	N1	
	(b)		$\vec{PQ} = -4\hat{i} - 7\hat{j} + p\hat{i} + 2p\hat{j}$	P1	
			$\sqrt{(-4+p)^2 + (-7+2p)^2} = 1$	K1	
			$5p^2 - 36p + 64 = 0 \&$ $(p-4)(5p-16) = 0$	K1	
			$p = 4, p = \frac{16}{5}$	N1	
					5
4	(a)		$\cos(\theta + \theta) = \cos \theta \cos \theta - \sin \theta \sin \theta$	K1	
			$(1 - \sin^2 \theta) - \sin^2 \theta$	K1	
			$\cos 2\theta = 1 - 2\sin^2 \theta$	N1	
	(b)	(i)	$\frac{1 - \left(1 - 2\sin^2 \frac{\theta}{2}\right)}{2}$	K1	
			$\sin^2 \frac{\theta}{2} \text{ (proven: RHS = LHS)}$	N1	
		(ii)	$1 - 2\sin^2 x = \sin^2 x - 2\sin x$	K1	
			$3\sin^2 x - 2\sin x - 1 = 0 \&$ $(\sin x - 1)(3\sin x + 1) = 0$	K1	
			$x = 90^\circ @ x = 199.47^\circ, 340.53^\circ$	N1	
			$x = 90^\circ, 199.47^\circ, 340.53^\circ$	N1	
					9

No	PEMARKAHAN			MARKAH	MARKAH PENUH
5	(a)		Guna $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$ Titik tengah $(-4, 2)$	K1	
			Guna $\frac{y_2 - y_1}{x_2 - x_1}$ $m_1 = -3$	K1	
			$-3 \times m_2 = -1$ & Ganti $(-4, 2)$ ke dalam $y = \left(\frac{1}{3}\right)x + c$ & Selesaikan untuk c OR $-3 \times m_2 = -1$ & Ganti $(-4, 2)$ ke dalam $(y - y_1) = \left(\frac{1}{3}\right)(x - x_1)$	K1	
			$y = \frac{1}{3}x + \frac{10}{3}$	N1	
	(b)		$\sqrt{(x - (-4))^2 + (y - 2)^2} = \sqrt{(-6 - (-4))^2 + (8 - 2)^2}$	K1	
			$x^2 + y^2 + 8x - 4y - 20 = 0$	N1	
					6
6	(a)		$a = 2, d = 4$ dan $T_n = 198$ Boleh Tersirat	P1	
			Guna $T_n = a + (n - 1)d$ $198 = 2 + (n - 1)(4)$	K1	
			$n = 50$	N1	
	(b)		$S_{50} = \frac{*50}{2} [2(2(*24)) + (*50 - 1)(4)]$	K1	
			5000	N1	
			$\text{Luas} = 5000 \times \frac{1}{2}(6)(8)$ atau $\text{Kos} = 5000 \times 0.80$	K1	
			120 000 cm ² , RM4000	N1N1	
					8

No	PEMARKAHAN							MARKAH	MARKAH PENUH																															
7	(a)		$\frac{dy}{dx} = 6x^2 + 6x - 12$							P1																														
			$6x^2 + 6x - 12 = 0$ dan $(x + 2)(x - 1) = 0$							K1																														
			$(1, 0)$ dan $(-2, 27)$							N1																														
	(b)		<table><tr><td>x</td><td>-3</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td></tr><tr><td>$\frac{dy}{dx}$</td><td>24</td><td>0</td><td>-12</td><td>-12</td><td>0</td><td>24</td></tr><tr><td>Tanda bagi $\frac{dy}{dx}$</td><td>+</td><td>0</td><td>-</td><td>-</td><td>0</td><td>+</td></tr><tr><td>Lakaran tangen</td><td>/</td><td>—</td><td>\</td><td>\</td><td>—</td><td>/</td></tr><tr><td>Lakaram graf</td><td colspan="3"></td><td colspan="3"></td></tr></table>	x	-3	-2	-1	0	1	2	$\frac{dy}{dx}$	24	0	-12	-12	0	24	Tanda bagi $\frac{dy}{dx}$	+	0	-	-	0	+	Lakaran tangen	/	—	\	\	—	/	Lakaram graf							K1 K1	
x	-3	-2	-1	0	1	2																																		
$\frac{dy}{dx}$	24	0	-12	-12	0	24																																		
Tanda bagi $\frac{dy}{dx}$	+	0	-	-	0	+																																		
Lakaran tangen	/	—	\	\	—	/																																		
Lakaram graf																																								
			$(1, 0)$ titik minimum dan $(-2, 27)$ titik maksimum							N1																														
	(c)		$\frac{f(0.5) = (0.5)^3 - \frac{15}{2}(0.5)^2 + 12(0.5)}{= 4.25}$ $\frac{f'(0.5) = 3(0.5)^2 - 15(0.5) + 12}{= 5.25}$							K1																														
			$\frac{\delta x = \frac{1}{100} \times 0.5 \quad \text{dan} \quad \delta y = 5.25 \times 0.005}{= 0.05 \quad \quad \quad = 0.02625}$							K1																														
			Peratus = $\frac{0.02625}{4.25} \times 100$							K1																														
			0.6176 %							N1																														
			OR $f(0.5) = 4.25$ atau $f'(0.5) = 5.25$							P1																														
			$\delta y = 5.25 \times \left[\frac{1}{100} \right] \times 0.5 \left[\frac{1}{100} \times 0.5 \right]$							K1																														
			$\frac{0.02625}{4.25} \times 100$							N1																														
			0.6176 %							N1																														
											10																													

No	PEMARKAHAN									MARKAH	MARKAH PENUH
8	(a)		$\sqrt{xy}$	12.98	18.50	24.30	30.00	35.50	41.20	N1	
			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 penyuaian terbaik dilukis [Sekurang-kurangnya 5 titik diplot]							N1	
	(b)	(i)	$\sqrt{xy} = kx + h$							P1	
			$k = *m$							K1	
			$k = 5.60$							N1	
			$h = *c$							K1	
			$h = 7.50$							N1	
		(ii)	232.73							N1	
											10
9	(a)		$40 = k(60)^2$							K1	
			$k = \frac{1}{90}$							N1	
	(b)		$\frac{x^3}{90(3)}$							K1	
			$0 - \frac{(p)^3}{90(3)} = \frac{925.92}{2}$							K1	
			$p = 50$							N1	
			$q = 28$							N1	
	(c)		$x^2 = 90y$							K1	
			$\pi \left[\frac{90y^2}{2} \right]$							K1	
			$\pi [45(28)^2 - 0]$							K1	
			$35\ 280\pi$							N1	
											10

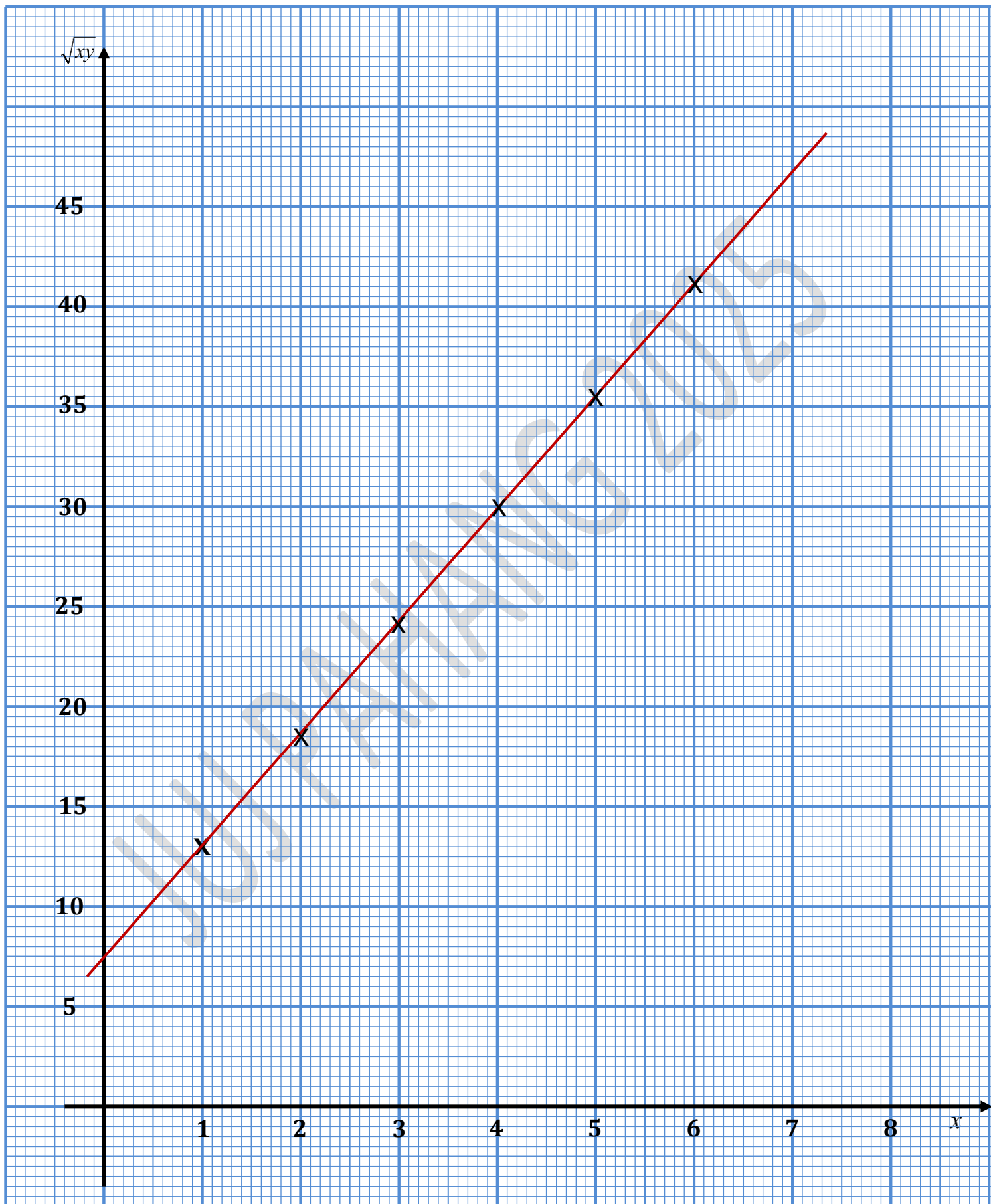
No	PEMARKAHAN			MARKAH	MARKAH PENUH
10	(a)		$50(1.047)$	K1	
			$50(1.047) \times 6$	K1	
			314.1	N1	
	(b)		$\frac{1}{2} \times 50^2 \times 1.047$	K1	
			$\frac{1}{2} \times 50^2 \times \sin 60^\circ$	K1	
			$3 \left(\left(\frac{1}{2} \times 50^2 \times \sin 60^\circ \right) + \left(\left(\frac{1}{2} \times 50^2 \times 1.047 \right) - \left(\frac{1}{2} \times 50^2 \times \sin 60^\circ \right) \right) \right)$ $@$ $\left(\frac{1}{2} \times 50^2 \times 1.047 \right) + 2 \left(\left(\frac{1}{2} \times 50^2 \times 1.047 \right) - \left(\frac{1}{2} \times 50^2 \times \sin 60^\circ \right) \right)$	K1	
			$\frac{3 \left(\left(\frac{1}{2} \times 50^2 \times \sin 60^\circ \right) + \left(\left(\frac{1}{2} \times 50^2 \times 1.047 \right) - \left(\frac{1}{2} \times 50^2 \times \sin 60^\circ \right) \right) \right) \times 150}{100000} @$ $\frac{\left(\left(\frac{1}{2} \times 50^2 \times 1.047 \right) + 2 \left(\left(\frac{1}{2} \times 50^2 \times 1.047 \right) - \left(\frac{1}{2} \times 50^2 \times \sin 60^\circ \right) \right) \right) \times 150}{100000}$	K1	
			$28.50 \times 6 @ 43.50 \times 3$	K1	
			$(6 \times 28.50) + (3 \times 43.50)$	K1	
			$301.50 > 300$, tidak mencukupi	N1	
					10
11	(a)		$\mu = 30$	N1	
			$\sigma = 8$	N1	
			$k = 45$	N1	
	(b)		$P \left(Z > \frac{45 - 30}{8} \right)$	K1	
			0.0303	N1	
	(c)		$P \left(\frac{15 - 30}{8} < Z < \frac{40 - 30}{8} \right)$	P1	

No	PEMARKAHAN			MARKAH	MARKAH PENUH
			 DAN $1 - (0.0303 + 0.1056)$	K1	
			0.8641	N1	
			0.8641×20	K1	
			17 hari , Layak	N1	
					10
12	(a)	(i)	$QR^2 = (11)^2 + (13.2)^2 - 2(11)(13.2)\cos 63^\circ$	K1	
			$QR = 12.78$	N1	
		(ii)	$\frac{\sin Q}{13.2} = \frac{\sin 63}{12.78}$	K1	
			66.97°	N1	
	(b)	(i)	 $\angle PQ'R = 113.03^\circ$	N1	
		(ii)	$\frac{1}{2}(11)(13.2)\sin [63^\circ - (180 - 2(66.97^\circ))]$	K1	
			21.15	N1	

No	PEMARKAHAN			MARKAH	MARKAH PENUH
			$\frac{21.15}{\frac{1}{2}(11)(13.2)\sin 63^\circ} \times 100$	K1	
			32.69 %	N1	
					10
13	(a)		Guna $v = 0$ dan selesikan untuk t	K1	
			5.5	N1	
	(b)		$S = 22t + \frac{7}{2}t^2 - \frac{2}{3}t^3$ dan ganti $t = 5.5$	K1	
			115.96	N1	
	(c)		$a = 7 - 4t$ dan guna $a = 0$	K1	
			$22 + 7\left(\frac{7}{4}\right) - 2\left(\frac{7}{4}\right)^2$	K1	
			28.125	N1	
	(d)		$S_7 = 22(7) + \frac{7}{2}(7)^2 - \frac{2}{3}(7)^3$	K1	
			$115.96 + (115.96 - 96.83)$	K1	
			135.09	N1	
					10
14	(a)	I	$y \leq 3x$	N1	
		II	$y \geq \frac{1}{2}x$	N1	
		III	$4x + 3y \leq 150$	N1	
	(b)		Satu garis lurus	K1	
			Semua garis dilukis	N1	
			Rantau berlorek R	N1	
	(c)	(i)	13	N1	

No	PEMARKAHAN			MARKAH	MARKAH PENUH
		(ii)	$k = 60x + 80y$	K1	
			Garis fungsi objek dan gantikan titik (12,34)	K1	
			3440	N1	
					10
15	(a)		$\frac{9000}{P_{2023}} \times 100 = 150$	K1	
			RM6000.00	N1	
	(b)		$m = 30$	P1	
			$\bar{I} = \frac{120(30) + 150(50) + 110(20)}{30 + 50 + 20}$	K1	
			133	N1	
	(c)		$\frac{P_{2024}}{30000} \times 100 = 133$	K1	
			RM39900.00	N1	
	(d)		Dilihat 144, 195 dan 110 (kesemuanya)	P1	
			$\bar{I} = \frac{144(30) + 195(50) + 110(20)}{30 + 50 + 20}$	K1	
			162.70	N1	
					10

JAWAPAN NO.8



JAWAPAN NO.14

