



MODUL PINTAS 2024

TINGKATAN 5

3472/2

MATEMATIK TAMBAHAN

Kertas 2

$2\frac{1}{2}$ jam

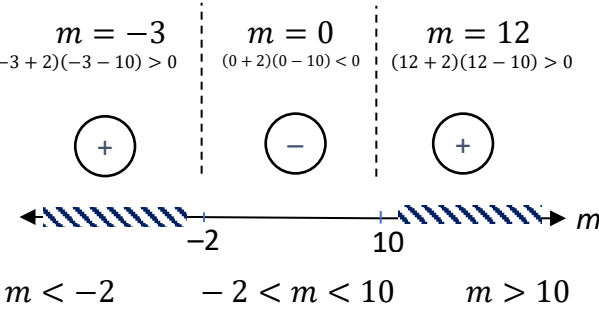
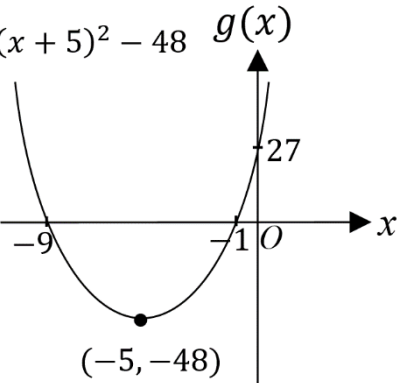
Dua jam tiga puluh minit

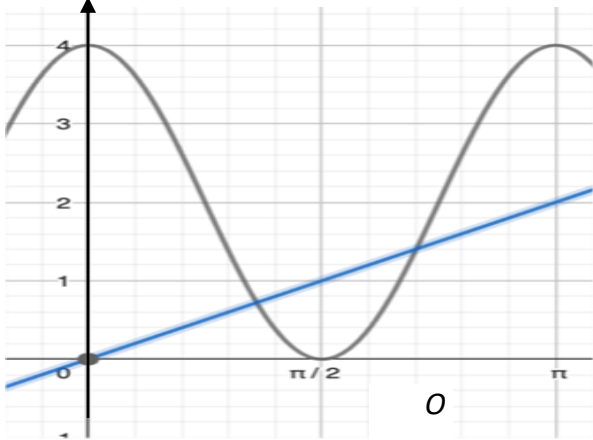
PERATURAN PEMARKAHAN

MATEMATIK TAMBAHAN K2

3472/2

NO SOALAN		JAWAPAN		SUB- MARKAH	MARKAH	
BAHAGIAN A						
1	$x^2 + y^2 = 720$ @ $4x + 2y = 120$			P1	6	
	$y = 60 - 2x$			P1		
	$x^2 + *(60 - 2x)^2 = 720$			K1		
	Selesaikan *persamaan kuadratik, $x^2 - 48x + 576 = 0$			K1		
	$(x - 24)^2 = 0$ @ Guna formula					
	$x = 24$			N1		
	$y = 12$			N1		
					6	
2	a	$\frac{\log_{\sqrt{x}}x^8}{\log_{\sqrt{x}}9}$ @ $\frac{\log_yy^7}{\log_y9}$		K1	3	
		$\frac{16 \log_{\sqrt{x}}\sqrt{x}}{\log_{\sqrt{x}}9}$ @ $\frac{7\log_yy}{\log_y9}$		K1		
		$\frac{16}{s} + \frac{7}{2t}$		N1		
	b	$\log_{10} 1.043^q > \log_{10} 7$		K1		3
		$q > \frac{\log_{10} 7}{\log_{10} 1.043}$		K1		
		47 tahun		N1		
					6	
3	a	(i)	$f^{-1}(x)$ wujud kerana $f(x)$ ialah fungsi satu kepada satu. $f^{-1}(x)$ exists because $f(x)$ is a one-to-one function.	P1	3	
		(ii)	$y^2 = 2x - 9$	K1		
	$f^{-1}(x) = \frac{x^2+9}{2}, x \geq 0$		N1			
	b	(i)	$g(y) = 3\left(\frac{2}{y}\right)$	K1		
			$g(x) = \frac{6}{x}, x \neq 0$	N1		

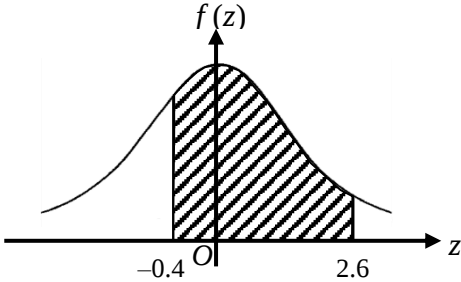
NO SOALAN			JAWAPAN	SUB-MARKAH	MARKAH
		(ii)	$g^2(x) = \frac{6}{\frac{6}{x}}$ dan $g^3(x) = \frac{6}{x}$ dan $g^4(x) = \frac{6}{\frac{6}{x}}$ $2n + 1$ adalah sentiasa ganjil, $n=1,2,3,\dots$ $g(x) = \frac{6}{x}, x \neq 0$. $2n + 1$ is always odd, $n=1,2,3,\dots$ $g^{2n+1}(x) = \frac{6}{x}, x \neq 0$.	K1 N1	4
					7
4	a		$(m - 4)^2 - 4(1)(9) > 0$ $(m + 2)(m - 10) > 0$ Titik Ujian: $m = -3$ $(-3 + 2)(-3 - 10) > 0$ $m = 0$ $(0 + 2)(0 - 10) < 0$ $m = 12$ $(12 + 2)(12 - 10) > 0$  Nota : Terima semua titik ujian yang betul dalam julat yang sepadan $m < -2, m > 10$	K1 K1 N1	3
b	(i)		$g(x) = 3(x + 5)^2 - 48$ $g(x)$  Bentuk  Titik minimum $(-5, -48)$, pintasan $x = -1, -9$ dan pintasan- $y = 27$ dilabel pada graf. Nota: Kedua-dua paksi- x dan paksi- y mesti dilukis dengan pembaris.	P1 P1	4
	(ii)		$p > 5$ $q < -48$	P1 P1	
					7

NO SOALAN		JAWAPAN	SUB- MARKAH	MARKAH
5	a	 Bentuk graf cos sekurang-kurangnya 1 kitaran Bilangan kitaran dan amplitude yang betul Anjakan graf 2 unit ke atas Lukis garis $y = \frac{2x}{\pi}$ dengan betul Bilangan penyelesaian = 2	P1 P1 P1 K1 N1	5
	b	$2(\cos^2 x - \sin^2 x - 2 \cos^2 x) = 0$ $\sin x (2 \sin x - 1) = 0$ Sudut rujukan = $0^\circ, 30^\circ$ $0^\circ, 30^\circ, 150^\circ, 180^\circ, 360^\circ$	K1 K1 N1 N1	4
				9
6	a	$y = \frac{x^3}{3} + 4x + \frac{4x^{-1}}{-1} + c$ $1 = \frac{1^3}{3} + 4(1) - \frac{4}{1} + c$ $y = \frac{x^3}{3} + 4x - \frac{4}{x} + \frac{2}{3}$	K1 K1 N1	3
	b	$\left[-\frac{2x^2}{2} + 3x\right]_{-2}^0 @ \frac{1}{2}(3+7)(2) @ \left[-\frac{x^4}{4} - \frac{x^3}{3} + 3x\right]_{-2}^0$ $0 - \left[-\frac{2(-2)^2}{2} + 3(-2)\right] @ 0 - \left[-\frac{(-2)^4}{4} - \frac{(-2)^3}{3} + 3(-2)\right]$ $10 - \frac{22}{3}$ $\frac{8}{3}$	K1 K1 K1 N1	4
				7

NO SOALAN		JAWAPAN		SUB- MARKAH	MARKAH	
7	a	$\frac{-5i + 5j}{\sqrt{(-5)^2 + 5^2}}$			K1	2
		$-\frac{1}{\sqrt{2}}i + \frac{1}{\sqrt{2}}j$			N1	
	b	(i)	$\overrightarrow{BD} = \overrightarrow{BA} + \overrightarrow{AD} @ \overrightarrow{EC} = \overrightarrow{ED} + \overrightarrow{DC} @ \text{ setara}$		P1	
			$\overrightarrow{BD} = -20x + 32y$		N1	
		(ii)	$\overrightarrow{EC} = 25x$		N1	
(iii)	$\overrightarrow{BD} = \lambda \overrightarrow{FD}$		P1			
	$\overrightarrow{BD} = \frac{4}{3}(-15x + 24y) @ -20 = -15\lambda \text{ dan } 32 = 24\lambda$		K1			
$\overrightarrow{BD} = \frac{4}{3}\overrightarrow{FD} @ \overrightarrow{BD} = 4\overrightarrow{BF} @ \text{ setara dan } B, F \text{ dan } D \text{ segaris}$					N1	6
8						

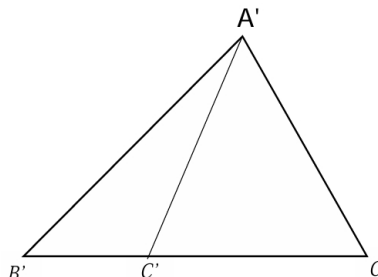


BAHAGIAN B			
8	a	$(2x + 6)^6(3) + 3x[12(2x + 6)^5]$ $6(2x + 6)^5(7x + 3)$	K1 N1 2
	b	$\delta y = 5(x + \delta x)^2 - 5x^2 \quad @ \quad \delta y = 10x + 5(\delta x)$ $\frac{dy}{dx} = \lim_{\delta x \rightarrow 0} 10x + 5(\delta x) \quad \text{dan} \quad 10x + 5(0)$ $10x$	K1 K1 N1 3
	c	$\frac{2(x - 2) - 1(2x - 8)}{(x - 2)^2}$ $3h = \frac{4}{(x - 2)^2}$ $h = \frac{1}{12}$ $m_2\left(\frac{1}{4}\right) = -1$ $m_2 = -4$	K1 K1 N1 K1 N1 5
			10
9	a	$\sqrt{(x - (-4))^2 + (y - 2)^2} = \sqrt{((-4) - (-1))^2 + (2 - (-1))^2}$ $x^2 + y^2 + 8x - 4y + 2 = 0$	P1 N1 2
	b	$h = \frac{1(-4) + 2(11)}{1 + 2} \quad @ \quad -2 = \frac{1(2) + 2k}{1 + 2}$ $h = 6 \quad @ \quad k = -4$ $h = 6 \quad \text{dan} \quad k = -4$	K1 N1 N1 3
	c	$\frac{1}{2} [6(-1) + (-1)(3) + (t)(10)] - [10(-1) + (-1)(t) + 3(6)] = 30$ $7, -\frac{43}{11}$	K1 N1 2
	d	$m = \frac{10 - 2}{6 - (-4)} \quad \text{dan} \quad \frac{4}{5} \times m_2 = -1$ $y - 2 = -\frac{5}{4}(x - 8)$ $y = -\frac{5}{4}x + 12$	K1 K1 N1 3
			10

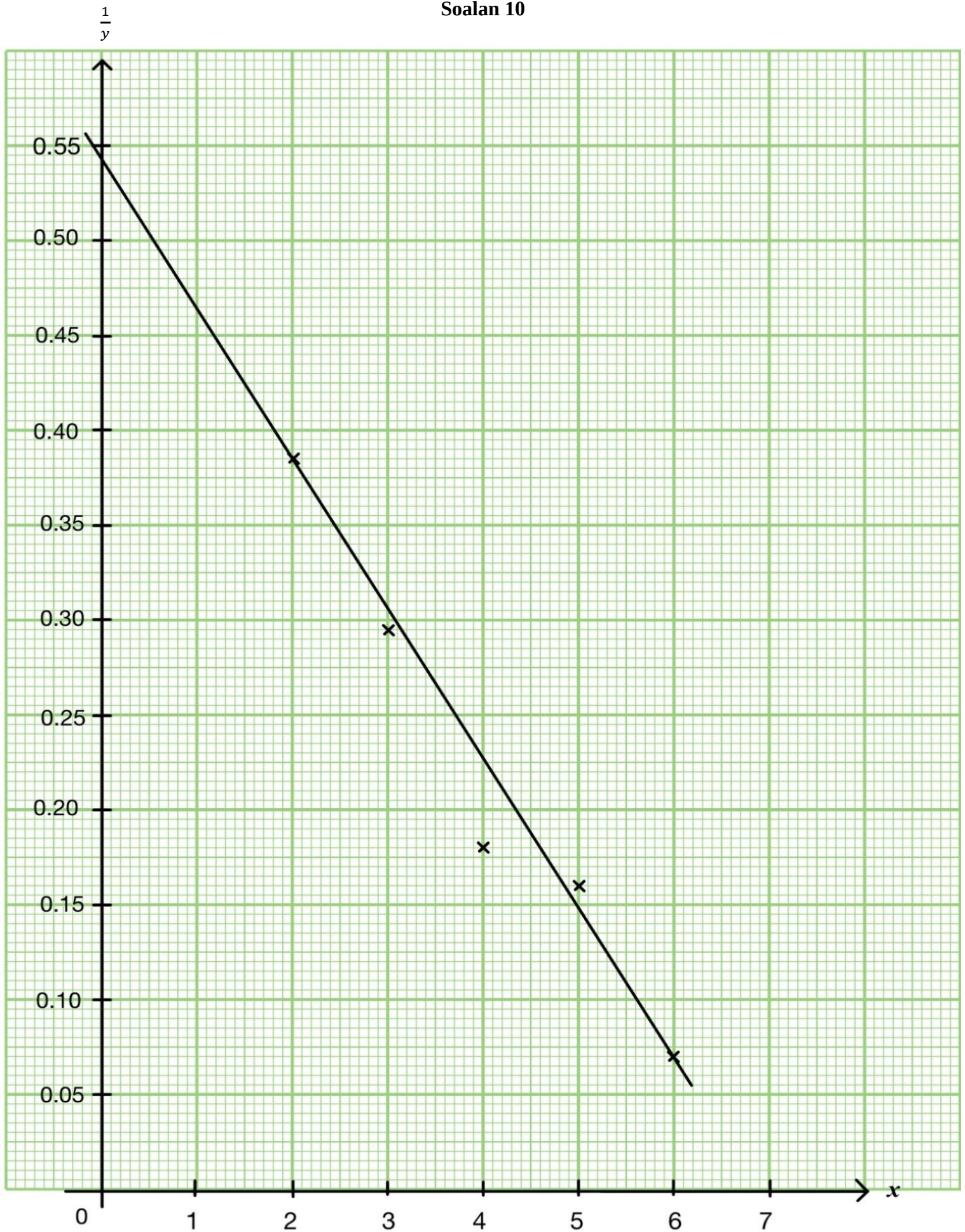
10	a	<table><tr><td>$\frac{1}{y}$</td><td>0.385</td><td>0.294</td><td>0.179</td><td>0.159</td><td>0.070</td></tr></table> Rujuk pada graf Skala betul dan memplot satu *titik dengan betul Semua titik diplotkan dengan betul Garis penyuaian terbaik					$\frac{1}{y}$	0.385	0.294	0.179	0.159	0.070	N1 K1 N1 N1	4
$\frac{1}{y}$	0.385	0.294	0.179	0.159	0.070									
	b	(i)	$\frac{1}{y} = \frac{p}{3}x + 2q$ $\frac{p}{3} = * m$ $p = * -0.27 \leftrightarrow -0.23$ $2q = * c$ $q = * 0.26 \leftrightarrow 0.28$					P1 K1 N1 K1 N1	6					
		(ii)	$\frac{1}{y} = * 0.225$ $y = 4.35 \leftrightarrow 4.44$					N1						
	10													
11	a	(i)	$P(X = 6) = {}^8C_6 \times (0.1)^6 \times (0.9)^2$ 0.00002268					K1 N1	5					
		(ii)	$0.15 > {}^nC_0 \times (0.1)^0 \times (0.9)^{n-0}$ $\log_{10} 0.15 > \log_{10} 0.9^n$ $n=19$					K1 K1 N1						
	b	(i)	$\sigma_K = \sqrt{400 \times 0.5 \times 0.5} = 10 @$ $\sigma_L = \sqrt{300 \times \frac{2}{3} \times \frac{1}{3}} = 8.165$ Lengkung A kerana sisihan piawai K lebih besar daripada L.					K1 N1	5					
		(ii)	12 $P\left(\frac{10 - 12}{5} < Z < \frac{25 - 12}{5}\right)$ 					N1 K1 N1						
10														

BAHAGIAN C

BAHAGIAN C					
12	a	(i)	$-t^2 + 5t + 6 > 0$ $0 < t < 6$	K1 N1	5
		(ii)	$-2t + 5 = 0$ $-\left(\frac{5}{2}\right)^2 + 5\left(\frac{5}{2}\right) + 6$ $\frac{49}{4}$	K1 K1 N1	
	b		$(t + 1)(t - 6) = 0$	K1	5
			$t = 6$	N1	
			$s = -\frac{t^3}{3} + \frac{5t^2}{2} + 6t$	K1	
			$-\frac{6^3}{3} + \frac{5(6)^2}{2} + 6(6)$	N1	
			54	N1	
					10
13	a	$\frac{95(x)+120(y)}{x+y} = 110$ atau $\frac{95(x)+130(z)}{x+z} = 120$		K1	3
		$\frac{x}{y} = \frac{2}{3}$ atau $\frac{x}{z} = \frac{2}{5}$		K1	
		$x : y : z = 2 : 3 : 5$		N1	
	b	$\frac{95(2)+120(3)+130(5)}{2+3+5}$		K1	2
		120		N1	
	c	$120 = \frac{40.50}{P_{21}} \times 100$		K1	2
		33.75		N1	
	d	$\frac{(120 \times 140)}{100}$		K1	3
168		N1			
Kenaikan sebanyak 68%		N1			
					10

14	a	(i)	$15^2 + 12^2 - 2(15)(12) \cos 80^\circ$ 17.51	K1 N1	5
		(ii)	55° dilihat $\frac{a}{\sin 45^\circ} = \frac{32}{\sin 55^\circ}$ 15.62	P1 K1 N1	
	b	$\frac{1}{2} \times 15 \times 12 \times \sin 80^\circ$ $\frac{1}{2} \times 15 \times 12 \times \sin 80^\circ = 2 \left(\frac{1}{2} \times b \times b \times \sin 90^\circ \right)$ 9.414		K1 K1 N1	3
	c	 125°		N1 N1	2
					10
15	a	(i) $x \geq \frac{1}{3}y$ or $y \leq 3x$		N1	3
		(ii) $3x + 2y \leq 2000$		N1	
		(iii) $2x + y \geq 600$		N1	
	b	- Lukis dengan betul sekurang-kurangnya satu garis lurus dari *ketaksamaan yang melibatkan x dan y pada paksi-paksi yang bermula dengan asalan. - Lukis semua *garis lurus dengan betul dari semua *ketaksamaan yang melibatkan x dan y (terima garisan putus-putus dan garis padu). - Rantau dilorek dengan betul.		K1 N1 N1	3
	c	(i)	120	N1	4
(ii)		(400 , 400) @ Seen 400 Max Profit = $12(400) + 6(400)$ = RM7200	N1 K1 N1		

Soalan 10



Soalan 15

