



**MODUL PINTAS
TINGKATAN 5**

3472/2

**MATEMATIK TAMBAHAN
Kertas 2**

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

Dua jam tiga puluh minit

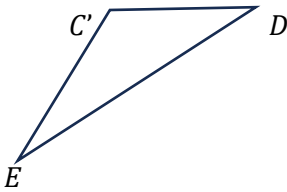
**PERATURAN PEMARKAHAN
MATEMATIK TAMBAHAN K2
3472/2**

NO SOALAN		JAWAPAN	MARKAH
BAHAGIAN A			
1	(a)	$\log_m \left(k \times \frac{1}{k} \right) = t$ $m^t = 1$ $t = 0$	K1 K1 N1
	(b)	Guna $\log_a b = \frac{\log_c b}{\log_c a}$ $\log_2(2x + 1) - \frac{\log_2 x^{10}}{\log_2 4} + \log_2 x^4.$ Guna hukum $\log_a m^n = n \log_a m$ $\log_2(2x + 1) - \log_2 x^5 + \log_2 x^4.$ Guna hukum $\log_a mn = \log_a m + \log_a n$ & $\log_a \frac{m}{n} = \log_a m - \log_a n$ $\log_2 \frac{(2x + 1)x^4}{x^5}$ $\log_2 \left(2 + \frac{1}{x} \right) @ \log_2 \frac{2x+1}{x}$	K1 K1 K1 N1
			7
2	(a)	$\int_3^1 2f(y) dy = (-2) \times (-5)$ 10	P1 N1
	(b)	Kamirkan $\int px^2 - 2x dx$ $y = \frac{px^3}{3} - x^2 + c$ Ganti (1,6) @ (-2, -15) dalam $*y = \frac{px^3}{3} - x^2 + c$ $6 = \frac{p(1)^3}{3} - (1)^2 + c @ -15 = \frac{p(-2)^3}{3} - (-2)^2 + c$ <u>Selesaikan untuk p @ c</u> $p = 6 @ c = 5$ $y = 2x^3 - x^2 + 5$	K1 K1 K1 N1

NO SOALAN		JAWAPAN	MARKAH																				
		$f(x) = 2x - 1$ $f^2(x) = 4x - 3$ $f^3(x) = 8x - 7$ $f^n(x) = 2^n x - 2^n + 1$	N1																				
			7																				
5	(a)	Guna $\sin^2 x = 1 - \cos^2 x$ @ $\sin^2 y = 1 - \cos^2 y$ ke dalam $2\cos^2 x + \sin^2 y = 1$ @ $\sin^2 x = 4\cos^2 y$ $2(1 - 4\cos^2 y) + (1 - \cos^2 y) = 1$ $y = 61.87^\circ$ $1 - \cos^2 x = 4\cos^2 y$ $x = 70.53^\circ$	K1 K1 N1 K1 N1																				
	(b)	Bagi fungsi $y = \sin 2x$ <table border="1"><tr><td>x</td><td>0</td><td>$\frac{\pi}{8}$</td><td>$\frac{\pi}{4}$</td><td>$\frac{3\pi}{8}$</td><td>$\frac{\pi}{2}$</td><td>$\frac{5\pi}{8}$</td><td>$\frac{3\pi}{4}$</td><td>$\frac{7\pi}{8}$</td><td>π</td></tr><tr><td>y</td><td>0</td><td>0.71</td><td>1</td><td>0.71</td><td>0</td><td>-0.71</td><td>-1</td><td>-0.71</td><td>0</td></tr></table> - Paksi-paksi betul dan skala seragam sekurang-kurangnya satu *titik diplot dengan betul. - Semua 8 *titik diplot dengan betul dan kelihatan bentuk graf $y = \sin x$. - Graf $y = \sin x$ dilukis dengan betul.	x	0	$\frac{\pi}{8}$	$\frac{\pi}{4}$	$\frac{3\pi}{8}$	$\frac{\pi}{2}$	$\frac{5\pi}{8}$	$\frac{3\pi}{4}$	$\frac{7\pi}{8}$	π	y	0	0.71	1	0.71	0	-0.71	-1	-0.71	0	N1 P1 P1 P1
x	0	$\frac{\pi}{8}$	$\frac{\pi}{4}$	$\frac{3\pi}{8}$	$\frac{\pi}{2}$	$\frac{5\pi}{8}$	$\frac{3\pi}{4}$	$\frac{7\pi}{8}$	π														
y	0	0.71	1	0.71	0	-0.71	-1	-0.71	0														
			9																				
6	(a)	Guna hukum segi tiga bagi ΔCAM @ ΔCBM	K1																				
	(i)	$\overline{CM} = -8\underline{x} + 6\underline{y}$	N1																				
	(ii)	Guna $\overline{CB} = 3\overline{CN}$ $\overline{CN} = -\frac{8}{3}\underline{x} + \frac{10}{3}\underline{y}$	K1 N1																				
	(b)	Guna $\overline{CQ} = \overline{CA} + n(\overline{AC} + \overline{CN})$	K1																				
	(i)	$-8\underline{x} + \frac{16}{3}n\underline{x} + \frac{10}{3}n\underline{y}$ $(\frac{16}{3}n - 8)\underline{x} + \frac{10}{3}n\underline{y}$	N1																				
	(ii)	$\overline{CQ} = -8\lambda\underline{x} + 6\lambda\underline{y}$ Banding pekali bagi $\underline{x}$ dan $\underline{y}$	N1 K1																				

NO SOALAN		JAWAPAN	MARKAH
		$\frac{16}{3}n - 8 = -8\lambda \quad @ \quad \frac{10}{3}n = 6\lambda$ $n = \frac{9}{11}$	N1
			9
7		$y = \frac{10-x}{2} \quad @ \quad x = 10 - 2y$ Hapuskan y atau x (melibatkan satu persamaan linear dan satu persamaan tak linear dalam sebutan x dan y) $5x^2 - 2x\left(\frac{10-x}{2}\right) = 24 \quad @$ $5(10 - 2y)^2 - 2y(10 - 2y) = 24$ Selesaikan persamaan kuadratik untuk $b \neq 0$ $x = 3 \quad \& \quad x = -\frac{4}{3}$ $@$ $y = \frac{7}{2} \quad \& \quad y = \frac{17}{3}$ $(3, \frac{7}{2}) \quad \& \quad (-\frac{4}{3}, \frac{17}{3})$	P1 K1 K1 N1 N1
			5
BAHAGIAN B			
8	(a)	$h = \frac{256}{r^2}$ Ganti $*h$ ke dalam $A = 2\pi rh + 4\pi r^2$ $A = 4\pi r^2 + \frac{512\pi}{r}$	P1 K1 N1
	(b)	Guna $\frac{dA}{dr} = 0$ & selesaikan *persamaan kubik. $8\pi r - \frac{512\pi}{r^2} = 0$ $r = 4$ $A = 4\pi(*4)^2 + \frac{512\pi}{*4}$ $= 192\pi$	K1 N1 K1 N1
	(c)	$\frac{dA}{dt} = 84\pi$ Guna $\frac{dA}{dt} = \frac{dA}{dr} \times \frac{dr}{dt}$ $84\pi = 8\pi(8) - \frac{512\pi}{8^2} \times \frac{dr}{dt}$	P1 K1 N1

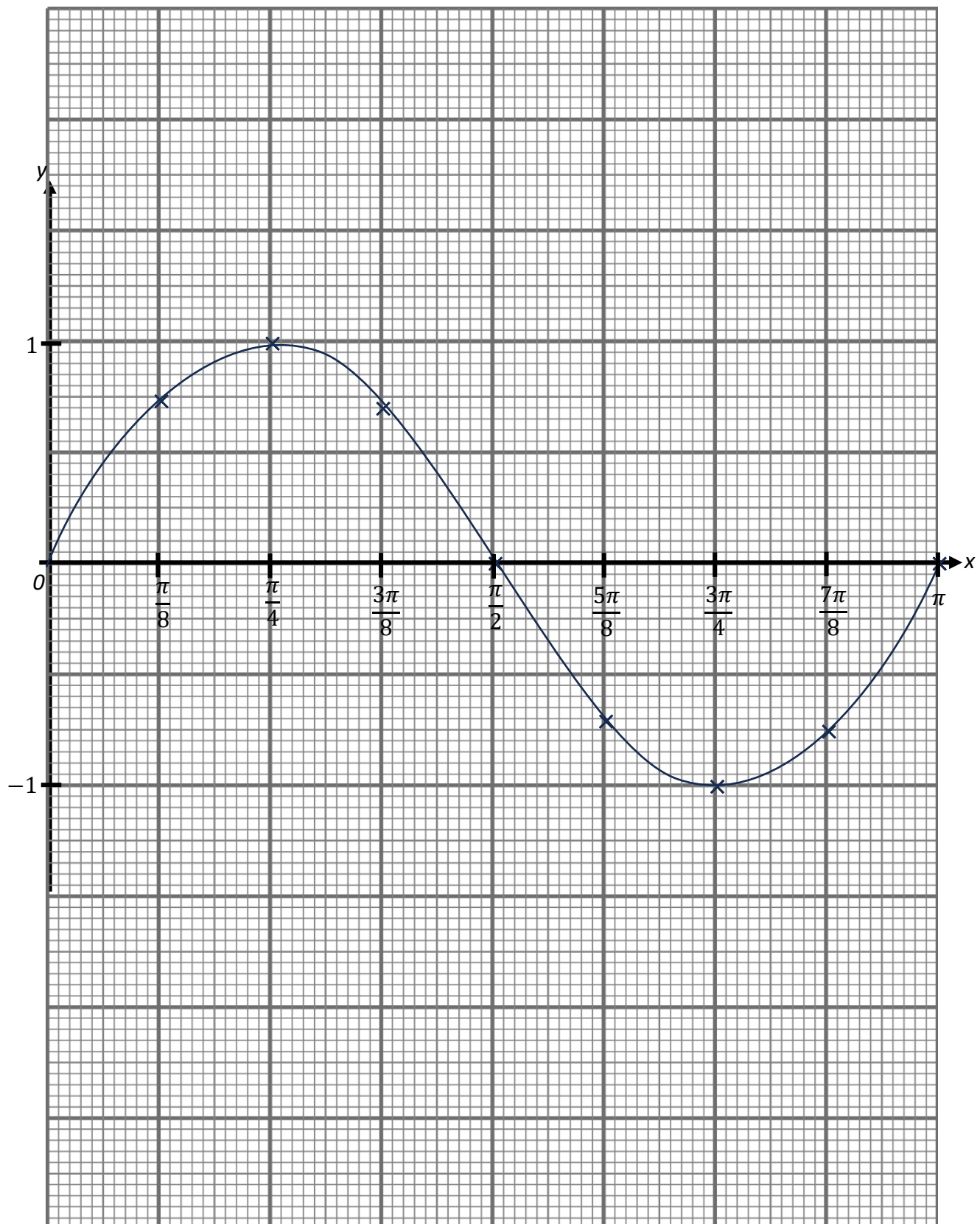
NO SOALAN		JAWAPAN								MARKAH
		0.03482								N1
	(ii)	Tulis $1 - P(X = 0) - P(X = 1) - P(X = 2)$ @ $P(X = 3) + P(X = 4) + P(X = 5) + P(X = 6)$ @ $1 - {}^6C_0 \left(\frac{3}{7}\right)^0 \left(\frac{4}{7}\right)^6 - {}^6C_1 \left(\frac{3}{7}\right)^1 \left(\frac{4}{7}\right)^5 - {}^6C_2 \left(\frac{3}{7}\right)^2 \left(\frac{4}{7}\right)^4$ @ ${}^6C_3 \left(\frac{3}{7}\right)^3 \left(\frac{4}{7}\right)^3 + {}^6C_4 \left(\frac{3}{7}\right)^4 \left(\frac{4}{7}\right)^2 + {}^6C_5 \left(\frac{3}{7}\right)^5 \left(\frac{4}{7}\right)^1 + {}^6C_6 \left(\frac{3}{7}\right)^6 \left(\frac{4}{7}\right)^0$ 0.5147 // 0.5148								P1 K1 N1
										10
11	(a)	xy	6.0	9.9	12	14	16.2	20	N1	
	(b)	• Graf garis lurus xy melawan x dilukis: - Paksi-paksi betul dan skala seragam dari titik pertama hingga titik terakhir. - Sekurang-kurangnya satu titik diplot dengan betul • 6 *titik diplot dengan betul • Garis lurus penyuaian terbaik Sekurang-kurangnya 5 *titik diplot dengan betul.								K1 N1 N1
	(c)	$xy = \frac{p}{2}x - 3q$								P1
	(i)	$xy = 18$ $y = 2.571$								N1
	(ii)	Guna * $m = \frac{p}{2}$ $p = 4$								K1 N1
		Guna * $c = -3q$ $q = -1.3$								K1 N1
										10
BAHAGIAN C										
12	(a)									
	(i)	$AB^2 = 5.280^2 + 4.916^2 - (2 \times 5.280 \times 4.916 \times \cos 50.52^\circ)$ $AB = 4.363$								K1 N1
	(ii)	$\frac{\sin \angle BAC}{5.280} = \frac{\sin 50.52^\circ}{4.363} @ \frac{\sin \angle ABC}{4.916} = \frac{\sin 50.52^\circ}{4.363}$								K1

NO SOALAN		JAWAPAN	MARKAH
		$\angle BAC = 69.08^\circ$ $\angle DCE = 180^\circ - 50.52^\circ - 69.08^\circ$ $60.40^\circ @ 60.42^\circ$	N1
	(iii)	$\angle DEC = 180^\circ - 60.40^\circ - 44.89^\circ$ 74.71° $\frac{CE}{\sin 44.89^\circ} = \frac{6.025}{\sin 60.40^\circ}$ $CE = 4.890$ Luas $\Delta DCE = \frac{1}{2} \times 4.890 \times 6.025 \times \sin 74.71^\circ$ 14.21	K1 K1 K1 N1
	(b) (i)	 Nota: 1. $\angle DC'E$ adalah cakah 2. Sisi-sisi dilakar	N1 (NMA)
	(ii)	$\angle DC'E = 180^\circ - 60.40^\circ$ $119.60^\circ @ 119.58^\circ$	N1 (NMA)
			10
13	(a)	$\frac{P_{23}}{45} \times 100 = 120 @ \frac{54}{P_{21}} \times 100 = 135$ $@ \frac{45}{P_{21}} \times 100 = 112.5$ $P_{23} = 54$ $P_{21} = 40$	K1 N1 N1
	(b) (i)	$I_P = \frac{105}{70} \times 100 @ I_Q = \frac{100}{80} \times 100 @$ $I_R = \frac{67.50}{60} \times 100$ $I_P = 150$ $I_Q = 125$ $I_R = 112.5$	K1 N1 (salah satu betul) N1 (semua betul)
		$140 = \frac{150y + 125x + (112.5)(2x)}{y + x + 2x}$ Selesaikan *persamaan linear serentak yang melibatkan x dan y . $x = 10 @ y = 70$ $y = 70 \& x = 10$	K1 K1 N1 N1
			10
14	(a)	$100x + 60y \leq 6600 @$ setara	N1

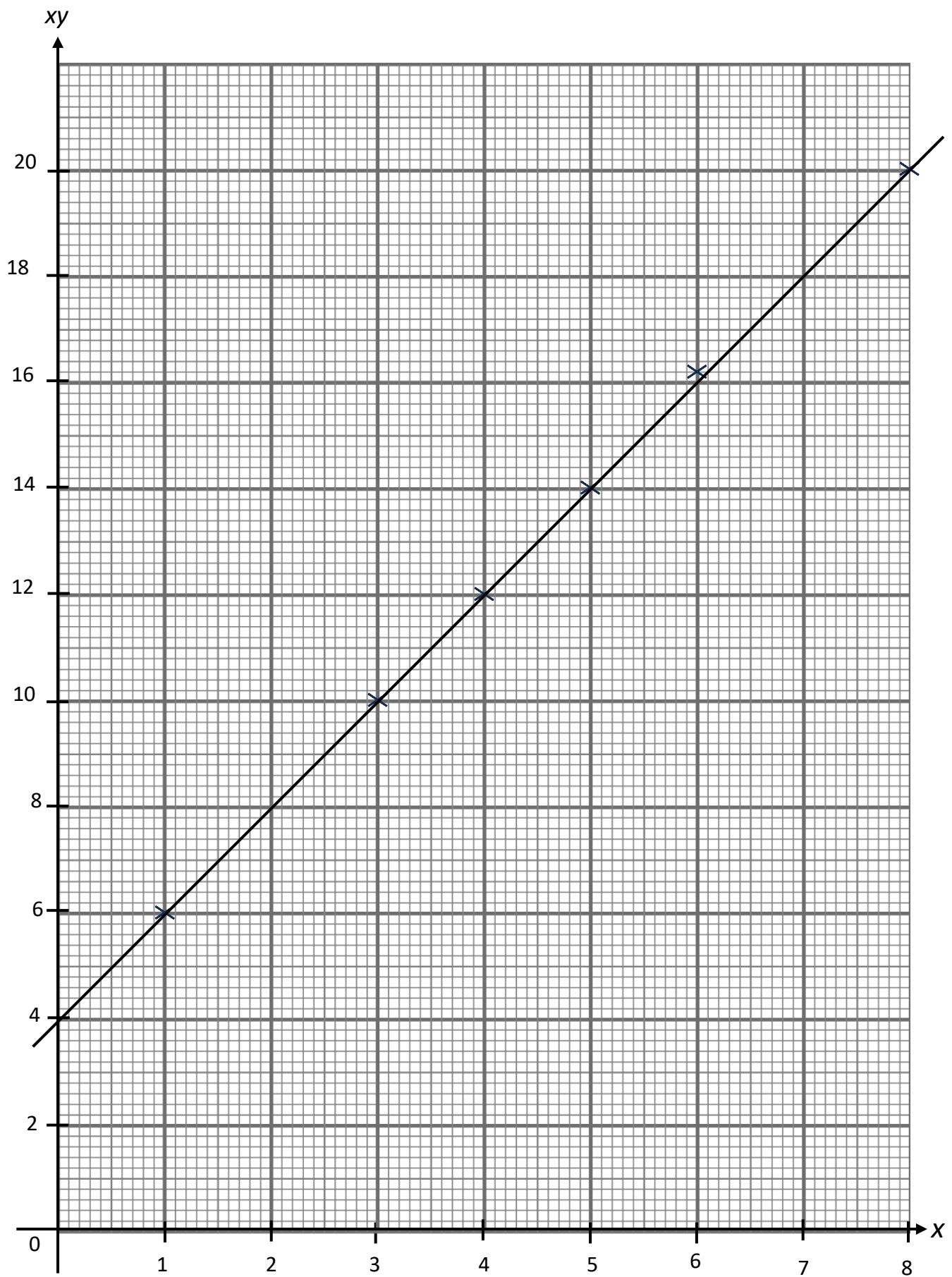
NO SOALAN		JAWAPAN	MARKAH
		$80x + 120y \geq 4800$ @ setara $y \geq 2x$	N1 N1
	(b)	- Lukis dengan betul sekurang-kurangnya satu garis lurus dari *ketaksamaan yang melibatkan x dan y pada paksi-paksi yang bermula dengan asalan. - Lukis semua *garis lurus dengan betul dari semua *ketaksamaan yang melibatkan x dan y (terima garisan putus-putus dan garis padu). - Rantau dilorek dengan betul.	K1 N1 N1
	(c) (i)	$30 \leq y \leq 85$	N1
	(ii)	(30, 60) Ganti mana2 titik integer dalam *rantau ke dalam $50x + 25y$ 3000	N1 K1 N1
			10
15	(a)	<u>Kamirkan v terhadap t</u> $s = -4t^3 + 12t^2 + 15t$ <u>Bezakan v terhadap t</u> $[a = -24t + 24]$ <u>Guna $a = 0$</u> $t = 1$ 23	K1 K1 K1 N1
	(b)	<u>Guna $v > 0$</u> $-12t^2 + 24t + 15 > 0$ <u>Selesaikan *ketaksamaan kubik</u> $-3(2t + 1)(2t - 5) > 0$ $0 < t < \frac{5}{2}$	K1 K1 N1

Lampiran

Soalan 5



Soalan 11



Soalan 14

