



**MAJLIS PENGETUA SEKOLAH MALAYSIA
NEGERI SELANGOR**

**PENILAIAN INTERVENSI TERBILANG AKADEMIK SELANGOR (PINTAS) 2026
MATEMATIK TAMBAHAN TINGKATAN 5**

Kertas 1

3472/1(PP)

Peraturan Pemarkahan

UNTUK KEGUNAAN PEMERIKSA SAHAJA



PERATURAN PEMARKAHAN MATEMATIK TAMBAHAN
MODUL PINTAS 2026
TINGKATAN 5
KERTAS 1 3472/1

NO SOALAN			JAWAPAN	MARKAH
1			$\frac{8!}{4! 3!}$ 280	K1
				N1
				2
2	(a)		$\frac{50 - 20}{120 - 40}$ Guna $Y = mX + c$ & selesaikan untuk c $50 = \left(\frac{3}{8}\right)(120) + c$ @ $20 = \left(\frac{3}{8}\right)(40) + c$ ATAU $Y - y_1 = m(X - x_1)$ $y^2x - 50 = \left(\frac{3}{8}\right)(x - 120)$ @ $y^2x - 20 = \left(\frac{3}{8}\right)(x - 40)$ $y = \pm \sqrt{\frac{3}{8} + \frac{5}{x}}$	K1
				K1
	(b)		8	N1
				4
3	(a)		16	N1
	(b)		$6x - 2$ $(6(4) - 2) \times 0.01$ 0.22	K1
				K1
				N1
				4
4	(a)		$4500 \times (0.88)^3$ 3066.62 // 3066.75	K1
				N1
	(b)		$\frac{4500}{1 - 0.88}$ 37500 Tidak mencukupi kerana $37500 > 35000$	K1
				N1
				N1
				5
5	(a)		0.0469	N1
	(b)		$1 - P(X = 0)$ @ $P(X = 1) + P(X = 2) + P(X = 3) + P(X = 4)$ $1 - 0.2109$ @ $0.4219 + 0.3164 + 0.0469 + 0.0039$ 0.7891	K1
				K1
				N1
				4

6	(a)	$10 \angle AOB = 16$ 1.6	K1 N1
	(b)	$\frac{1}{2}(10)^2(2\pi - 1.6) @ \frac{1}{2}(8)^2(2\pi - 1.6)$ $\frac{1}{2}(8)(8)\sin 91.66$ $\frac{1}{2}(10)^2(2\pi - 1.6) - \frac{1}{2}(8)^2(2\pi - 1.6) + \frac{1}{2}(8)(8)\sin 91.66$ 116.30	K1 K1 K1 N1
			6
	(a)	Guna $y = mx + c$ & selesaikan untuk c $4 = 2(2) + c @ -2 = 2(-1) + c$ ATAU $y - y_1 = m(x - x_1)$ $y - 4 = 2(x - 2) @ y - (-2) = 2(x - (-1))$ $y = 2x$	K1 N1
	(b)	$2 \times \left(-\frac{1}{2}\right) = -1$ Selesaikan persamaan PR dan QS $(2x) - 1 = -\frac{1}{2}(x - 3) @ (2x) - 3 = -\frac{1}{2}(x - (-1))$ $\left(\frac{-1 + 3}{2}, \frac{3 + 1}{2}\right)$ Titik tengah QS = titik persilangan PR dan QS & PR merupakan pembahagi dua sama berserenjang QS , maka $PQRS$ ialah sebuah layang. <i>Midpoint QS = intersection point of PR and QS & PR is the perpendicular bisector of QS, therefore $PQRS$ is a kite.</i>	K1 K1 K1 N1
8	(a)	$-3\hat{i} + 5\hat{j} @ \begin{pmatrix} -3 \\ 5 \end{pmatrix}$	N1
	(b)	$-7 + 3p - \frac{1}{2}(-8) = 11$ $\frac{14}{3}$	K1 N1
	(c)	$(6\hat{i} - \hat{j}) + t(-3\hat{i} + 3\hat{j}) = (8\hat{i} + 9\hat{j}) + t(-4\hat{i} - 2\hat{j})$ $6 - 3t = 8 - 4t \quad \& \quad -1 + 3t = 9 - 2t$ 2	K1 K1 N1
			6

9	(a)	$\frac{(qx+3)^{n+1}}{(n+1)q} + c \quad \& \quad n+1=5 \quad @ \quad (n+1)q=10$ $n=4 \quad \& \quad q=2$	K1 N1
	(b)	$\int_0^4 h(x)dx = - \int_4^0 h(x)dx$ $\int_0^4 h(x)dx - \frac{1}{2}(2+18)(4)$ 8	P1 K1 N1
			5
	(a)	$(-m)^2 - 4(3)(4n-9) > 0$ $m^2 > 48n - 108$	K1 N1
	(b)	(i) $3\left(x^2 - \frac{m}{3}x + \left(\frac{-\frac{m}{3}}{2}\right)^2 - \left(\frac{-\frac{m}{3}}{2}\right)^2\right) + 4n - 9$ $3\left(x - \frac{m}{6}\right)^2 - \frac{m^2}{12} + 4n - 9$ $*\left(-\frac{m^2}{12} + 4n - 9\right) = -5 \quad @ \quad *\left(\frac{m}{6}\right) = 2$ $m = 12 \quad \& \quad n = 4$ (ii) sebelah kiri paksi-y & titik minimum $(-2, -5)$ <i>left of the y-axis & minimum point $(-2, -5)$</i>	K1 N1 K1 N1 N1
11	(a)	(i) ${}^4P_1 \times 8!$ 161280 (ii) $5! \times 4!$ 2880	K1 N1 K1 N1
	(b)	${}^4C_0 \times {}^7C_6 \quad @ \quad {}^4C_1 \times {}^7C_5 \quad @ \quad {}^4C_2 \times {}^7C_4$ $({}^4C_0 \times {}^7C_6) + ({}^4C_1 \times {}^7C_5) + ({}^4C_2 \times {}^7C_4)$ 301	P1 K1 N1
			7
	(a)	$d_1 = 5 - 3 \quad \& \quad d_2 = 7 - 5$ panjang aritmetik & $d_1 = d_2 = 2$	K1 N1
	(b)	$3 + (n-1)(*2)$ $2n + 1$ 25	K1 N1 N1
12	(c)	44×10 $44 \times 10 = \frac{n}{2}[2(3) + (n-1)(*2)]$ 20	P1 K1 N1
			8

13	(a)		$\frac{\pi}{6} // 30^{\circ}$ (dilihat) $\frac{1}{\sqrt{3}}$	P1 N1
	(b)		Guna $\sin^2 x + \cos^2 x = 1$ kiri = kanan	K1 N1
	(c)		Gunakan petua Sinus $\frac{\sin \theta}{2p} = \frac{\sin \alpha}{CE} @ \text{ setara}$ $\sin \theta = \sin(\alpha + \beta)$ Guna $\frac{1}{2} ab \sin c$ $L = \frac{1}{2} (2p) \left(\frac{2p \sin \alpha}{\sin \theta} \right) \sin \beta @ \text{ setara}$ $L = \frac{2p^2 \sin \alpha \sin \beta}{\sin(\alpha + \beta)}$	K1 K1 K1 N1
				8
14	(a)	(i)	$5^{4+m+1} = 5^3$ $\frac{5}{2}$	K1 N1
		(ii)	$\sqrt{4^x} = 1 \ \& \ \sqrt{4^x} = 2$ 1	K1 N1
	(b)		$\frac{1}{3 - \sqrt{3}} \times \frac{3 + \sqrt{3}}{3 + \sqrt{3}}$ $\frac{3 + \sqrt{3}}{3^2 - (\sqrt{3})^2}$ $\frac{1}{3} + \frac{1}{6} \sqrt{3}$ $\frac{1}{3}$	K1 K1 N1 N1
				8

15	(a)	(i)	11	N1
		(ii)	$-1 = 6\left(\frac{15}{2}k\right) + 7 + k$	K1
			$-\frac{4}{23}$	N1
	(b)		$\frac{x-2}{3}$	N1
			$\ast\left(\frac{20-2}{3}\right)$	K1
			6	N1
	(c)		$6\ast\left(\frac{x-2}{3}\right) + 7 + k$	K1
			$2x + 3 + k$	N1
				8
				80





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MATEMATIK TAMBAHAN TINGKATAN 5**

Kertas 2

3472/2(PP)

Peraturan Pemarkahan

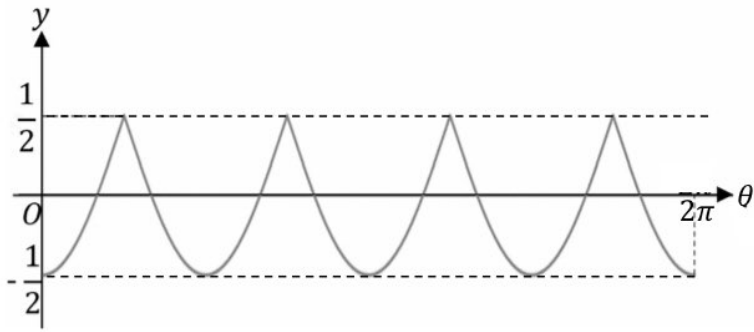
UNTUK KEGUNAAN PEMERIKSA SAHAJA



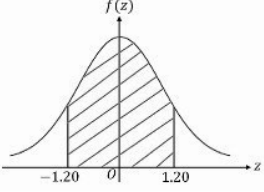
PERATURAN PEMARKAHAN MATEMATIK TAMBAHAN
MODUL PINTAS 2026
TINGKATAN 5
KERTAS 2 3472/2

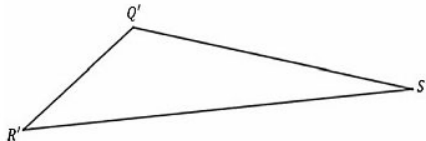
NO SOALAN			JAWAPAN	MARKAH
1			$y = 2x - 3$ $x^2 + (2x - 3)^2 + x(2x - 3) = 13$ $x = \frac{-(-1) \pm \sqrt{(-1)^2 - 4(7)(-4)}}{2(7)}$ OR Penyempurnaan kuasa dua	P1 K1 K1
			$x = -0.240$, $x = 2.383$ $y = -3.480$, $y = 1.766$	N1 N1
				5
2	(a)		$g(x) = x^2 - x + c$ $-4 = (-1)^2 - (-1) + c$ & selesaikan untuk c $g(x) = x^2 - x - 6$	K1 K1 N1
	(b)		$\pi * \left[\frac{x^5}{5} - \frac{2x^4}{4} - \frac{11x^3}{3} + \frac{12x^2}{2} + 36x \right]_{-2}^{-1}$ @ $\pi * \left[\frac{x^5}{5} - \frac{2x^4}{4} - \frac{11x^3}{3} + \frac{12x^2}{2} + 36x \right]_{-2}^3$ $\pi(4)^2 * (3)$ @ $\pi \int_{-1}^2 16 \, dx$ dan ganti had $2 \left(\frac{181}{30} \pi \right) + 48\pi$ $\frac{901}{15} \pi$	K1 K1 K1 N1
				7
3	(a)	(i)	$gf(x) = 3x + 4$	N1
		(ii)	$3(x + 1) + 4$ $3x + 7$	K1 N1
	(b)		$fg(x) = 0.8(x - 30)$ @ $gf(x) = 0.8x - 30$ $0.8(250 - 30)$ & $0.8(250) - 30$ 176 & 170 $gf(250) < fg(250)$, diskaun diikuti rebat.	K1 K1 K1 N1
				7



4	(a)		Guna hukum segitiga $OPQ @ ORS @ RPS$ atau hukum poligon $ROQS$ @ setara $\overrightarrow{PQ} = \overrightarrow{PO} + \overrightarrow{OQ} @ \overrightarrow{RS} = \overrightarrow{RP} + \overrightarrow{PS}$	K1
		(i)	$-\underline{p} + \underline{q}$	N1
		(ii)	$-\frac{1}{15}\underline{p} + \frac{2}{5}\underline{q}$	N1
	(b)		$\overrightarrow{RT} = -\frac{2}{3}\underline{p} + \underline{q} + k\underline{q}$ $\overrightarrow{RS} = -\frac{1}{15}\lambda\underline{p} + \frac{2}{5}\lambda\underline{q}$ Bandingkan pekali $\underline{p}$ dan $\underline{q}$ $-\frac{2}{3} = -\frac{1}{15}\lambda \quad \& \quad (k+1) = \frac{2}{5}\lambda$ $\lambda = 10$ dan ganti λ $k = 3$	K1 N1 K1 K1 N1
				8
5	(a)	(i)	$\cos \theta \cos \theta - \sin \theta \sin \theta @$ $\cos 2\theta = 2 \cos^2 \theta - (\sin^2 \theta + \cos^2 \theta) @$ $\cos 2\theta = (\sin^2 \theta + \cos^2 \theta) - 2\sin^2 \theta$ kiri = kanan	K1 N1
		(ii)	$\cos 2\theta = -\frac{1}{2}$ 60 dilihat 60, 120, 240, 300	P1 P1 N1
	(b)	(i)	 bentuk graf kosinus 2 kitaran & mutlak Negatif & anjakan $\frac{1}{2}$ unit ke atas	P1 P1 P1
		(ii)	$-\frac{1}{2} < m < \frac{1}{2}$	N1
				7

9	(a)	(i)	Beza $x^3 - 6x^2 + 9x + 4$ terhadap x $3x^2 - 12x + 9$ Ganti $x = 2$ ke dalam $\ast \frac{dy}{dx}$ & $m_1 \times m_2 = -1$ $3(2)^2 - 12(2) + 9$ & $\ast(-3) \times m_2 = -1$ Ganti $(2,\ast 6)$ ke dalam $y = \ast \left(\frac{1}{3}\right)x + c$ & Selesaikan untuk c OR Ganti $(2,\ast 6)$ ke dalam $(y - y_1) = \ast \left(\frac{1}{3}\right)(x - x_1)$ $y = \frac{1}{3}x + \frac{16}{3}$ @ setara	K1	K1	K1	N1				
		(ii)	Samakan $\ast \frac{dy}{dx}$ dengan 0 $x = 1$, $x = 3$ Beza $\frac{d^2y}{dx^2}$ dan ganti nilai $x = 1$ & $x = 3$ $6x - 12$ & $6(1) - 12$ $-6 < 0$, Titik maksimum pada (1,8) & $12 > 0$, Titik minimum pada (3,4)	K1	K1	N1					
	(b)		Beza $7x - x^2$ terhadap x & ganti $x = 2$ $\frac{0.03}{10} \times 100$ 0.3	K1	K1	N1					
				10							
10	(a)		<table><tr><td>ln y</td><td>- 0.99</td><td>- 0.15</td><td>0.80</td><td>1.75</td><td>2.55</td><td>3.50</td></tr></table>	ln y	- 0.99	- 0.15	0.80	1.75	2.55	3.50	N1
ln y	- 0.99	- 0.15	0.80	1.75	2.55	3.50					
	(b)		Sekurang-kurangnya satu $\ast$titik diplot betul 6 $\ast$titik diplot dengan betul Garis lurus penyuaian terbaik	K1	N1	N1					
	(c)		$\ln y = bx + \ln a$ $\ast m = b$ $\ast c = \ln a$ $(1.875 \leq c \leq 1.925)$	P1	K1	K1					

		(i)	$a = 0.1496$ $b = 0.80$	N1 N1
		(ii)	4.055	N1
				10
11	(a)	(i)	${}^nC_n \times (0.9)^n \times (0.1)^0 = 0.2059$ $n = 15$ 13.5	K1 N1 N1
		(ii)	$P(X > 13)$ ${}^{15}C_{14} \times (0.9)^{14} \times (0.1)^1 + {}^{15}C_{15} \times (0.9)^{15} \times (0.1)^0$ 0.5490	K1 K1 N1
	(b)		$P\left(\frac{1.2-1.8}{0.5} \leq Z \leq \frac{2.4-1.8}{0.5}\right)$ $1 - P(Z < -1.2) - P(z > 1.2)$ OR  0.7698 307	P1 K1 N1 N1
				10
12	(a)		Bezakan s terhadap t & sama dengan 0 $9t^2 - 45t + 36 = 0$ $9(t - 4)(t - 1) = 0$ 4, 1	K1 K1 N1
	(b)		Bezakan v terhadap t $18t - 45$ & gantikan $t = 0$ -45	K1 N1
	(c)	(i)	$18t - 45 = 0$ $0 \leq t \leq \frac{5}{2}$	K1 N1
		(ii)	$s_1 = 3(1)^3 - \frac{45}{2}(1)^2 + 36(1)$ @ $s_{\frac{5}{2}} = 3\left(\frac{5}{2}\right)^3 - \frac{45}{2}\left(\frac{5}{2}\right)^2 + 36\left(\frac{5}{2}\right)$ $s_1 + \left s_{\frac{5}{2}} - s_1\right $ $36.75 // \frac{147}{4}$	K1 K1 N1
				10

13	(a)	(i)	$\frac{QS}{\sin 65} = \frac{9.2}{\sin 35}$ 14.54	K1 N1	
		(ii)	$(*14.54)^2 = (6.5)^2 + (12.4)^2 - 2(6.5)(12.4) \cos \angle QRS$ 95.48	K1 N1	
		(iii)	$\frac{1}{2}(9.2)*(14.54) \sin 80 @ \frac{1}{2}*(14.54)(12.4) \sin^* 95.48$ $\frac{1}{2}(9.2)*(14.54) \sin 80 + \frac{1}{2}*(14.54)(12.4) \sin^* 95.48$ 105.99	K1 N1	
	(b)	(i)		N1	
		(ii)	$\frac{\sin \angle Q'S'R'}{6.5} = \frac{\sin 121.91}{12.4}$ $\angle Q'S'R' = 26.42$	K1 N1	
					10
14	(a)		$\frac{1.20}{1.00} \times 100 = y @ \frac{3.00}{z} \times 100 = 150$ $y = 120 \text{ \& } z = 2$	K1 N1	
		(b)	42 (dilihat) $\frac{100(25) + 120(14) + 150(42) + 125(19)}{25 + 14 + 42 + 19}$ 128.55 & meningkat / increase 28.55%	P1 K1 N1	
	(c)	(i)	$\frac{P_{2026}}{150} \times 100 = 128.55$ 192.83	K1 N1	
		(ii)	$\frac{128.55 \times 128.55}{100}$ 165.25 247.88	K1 N1 N1	
					10
	15	(a)		$8x + 24y \leq 3200 @ \text{ setara}$ $\frac{y}{x} \geq \frac{1}{2} @ \text{ setara}$	N1 N1
(b)			Jumlah buku yang dibeli melebihi 120 naskah.	N1	
(c)			Lukis sekurang-kurangnya satu garis lurus dari ketaksamaan yang melibatkan x dan y .	K1	

			Lukis kedua-dua garis lurus dari ketaksamaan yang melibatkan x dan y . Rantau R dilabel dengan betul.	K1 N1
	(d)	(i)	$k = 5x + 9y$	N1
		(ii)	Lukis $k = 5x + 9y$ ($m = -\frac{5}{9}$) Ganti (160,80) ke dalam $k = 5x + 9y$ 1520	K1 K1 N1
				10

