



**MODUL PINTAS
TINGKATAN 5**

**MATEMATIK TAMBAHAN
Kertas 1**

3472/1

2 jam

Dua jam

**PERATURAN PEMARKAHAN
MATEMATIK TAMBAHAN K1**

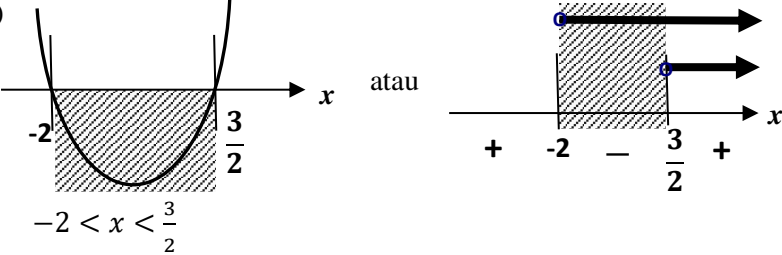
3472/1

NO	PENYELESAIAN	MARKAH		
1.	<p>(a)</p> $\frac{p^2}{3} \times 3^p \times 2^{-(p+6)} \times y^{-4p} \times y^{p+6} = q^1 y^{-3}$ $y^{-4p+p+6} = y^{-3}$ $-3p + 6 = -3$ $p = 3$ $\frac{p^2}{3} \times 3^p \times 2^{-(p+6)} = q^1$ $q = \frac{81}{512}$ <p>(b)</p> $\left(\begin{matrix} \log_2 8 \\ \log_2 \sqrt{y} \end{matrix} \right) \left(\begin{matrix} \log_2 y \\ \log_2 x \end{matrix} \right) (\log_2 x)$ $\left(\begin{matrix} 3 \log_2 2 \\ \frac{1}{2} \log_2 y \end{matrix} \right) \left(\begin{matrix} \log_2 y \\ \log_2 x \end{matrix} \right) (\log_2 x)$ <p>6</p>	K1 N1 K1 N1	4	7
2.	$x = 5 - 2y \dots \dots \dots (1)$ $ x + y = 4 \dots \dots \dots (2)$ <p>Gantikan (1) ke dalam (2)</p> $ 5 - 2y + y = 4$ $5 - y = \pm 4$ $y = 1, \quad y = 9$ $x = 3, \quad x = -13$	P1 K1 N1 N1	4	4

NO	PENYELESAIAN	MARKAH		
3.	$\frac{a(r^4 - 1)}{r - 1} = 10 \left[\frac{a(r^2 - 1)}{r - 1} \right]$ $r^4 - 1 = 10r^2 - 10$ $r^4 - 10r^2 + 9 = 0 \text{ (Tertunjuk/ Proven)}$ $r^4 - 10r^2 + 9 = 0$ $(r^2 - 1)(r^2 - 9) = 0$ $r^2 - 1 = 0 \qquad r^2 - 9 = 0$ $r = \pm 1 \text{ (Abaikan)} \quad \text{atau} \quad r = \pm 3$ <p>Nilai Positif $r = 3$ / <i>The value of $r = 3$</i></p>	K1		
		N1	5	5
		K1		
		N1		
		N1		
4.	(a) $\cos 3\alpha = \cos(2\alpha + \alpha)$ $= \cos 2\alpha \cos \alpha - \sin 2\alpha \sin \alpha$ $= (2 \cos^2 \alpha - 1)\cos \alpha - (2 \sin \alpha \cos \alpha)\sin \alpha$ $= 2 \cos^3 \alpha - \cos \alpha - 2 \sin^2 \alpha \cos \alpha$ $= 2 \cos^3 \alpha - \cos \alpha - 2(1 - \cos^2 \alpha)\cos \alpha$ $= 2 \cos^3 \alpha - \cos \alpha - 2 \cos \alpha + 2 \cos^3 \alpha$ $= 4 \cos^3 \alpha - 3 \cos \alpha$	K1		
		K1	4	
		K1		
		K1		
	(b) $2 \cos^2 \alpha - 1 = 5 \cos \alpha - 3$ $2 \cos^2 \alpha - 5 \cos \alpha + 2 = 0$ $(\cos \alpha - 2)(2 \cos \alpha - 1) = 0$ $\cos \alpha = 2 \text{ (Tiada Penyelesaian)} \qquad 2 \cos \alpha = 1$ $\qquad \qquad \qquad \qquad \qquad \qquad \cos \alpha = \frac{1}{2}$ $\qquad \qquad \qquad \qquad \qquad \qquad \alpha = 60^\circ$	K1		7
		K1	3	
		N1		

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5.	<p>(a)</p> $y = 0,$ $x^2 - 14x + 40 = 0$ $(x - 4)(x - 10) = 0 \quad \text{atau} \quad b^2 - 4ac = (-14)^2 - 4(1)(40)$ $x = 4 \quad \text{atau} \quad x = 10 \qquad \qquad \qquad = 36 > 0$ <p>Lokus R bersilang dengan paksi-x pada titik $(4, 0)$ dan $(10, 0)$.</p> <p><i>Locus R intersects the x - axis at $(4, 0)$ and $(10, 0)$.</i></p> <p style="text-align: center;">atau</p> <p>Lokus R bersilang dengan paksi-x pada dua titik berbeza.</p> <p><i>Locus R intersects the x - axis at two different points.</i></p> <hr/> <p>(b)</p> $y = x - 2 \quad \text{-----} (1)$ $x^2 + y^2 - 14x + 8y + 40 = 0 \quad \text{-----} (2)$ <p>Substitute (1) into (2),</p> $x^2 + (x - 2)^2 - 14x + 8(x - 2) + 40 = 0$ $x^2 + x^2 - 4x + 4 - 14x + 8x - 16 + 40 = 0$ $2x^2 - 10x + 28 = 0$ $x^2 - 5x + 14 = 0$ $b^2 - 4ac$ $= (-5)^2 - 4(1)(14)$ $= -31 < 0$ <p>$y = x - 2$ bukan tangen kepada lokus R atau $y = x - 2$ tidak menyentuh lokus R</p> <p><i>$y = x - 2$ is not tangent to the locus R or $y = x - 2$ does not touch locus R</i></p>	K1 N1	3	
		K1 K1 K1 N1	4	7
6.	<p>a) i) $m = \frac{1}{2}$</p> <p>ii) $y = \frac{5}{2x-1}$</p> $y(2x - 1) = 5$ $2xy = 5 + y$ $x = \frac{5+y}{2y}$ $f(x) = \frac{5+x}{2x}, x \neq 0$	N1 K1 N1	3	6

NO	PENYELESAIAN	MARKAH		
	b) $p \left(\frac{2x-3}{3} \right) - q = -3x + 6$ $\frac{2p}{3} = -3$ atau / or $-p - q = 6$ $p = -\frac{9}{2}$ $q = -\frac{3}{2}$	K1		
		K1	3	
		N1		
7.	a) $\left(4y = 2x + \frac{q}{x} \right) \frac{x}{4}$ $xy = \frac{x^2}{2} + \frac{q}{4}$		1	
		N1		
	b) $\frac{1}{2} = \frac{2-p}{10-0}$ atau $2 = \frac{1}{2}(10) + \frac{q}{4}$ atau $\frac{q}{4} = p$ $p = -3$ $q = -12$	K1		4
		N1	3	
		N1		
8.	a) $\overrightarrow{OT} = \overrightarrow{OR} + \overrightarrow{RT}$ $= \frac{1}{2}\overrightarrow{OP} + m\overrightarrow{RQ}$ $= \frac{1}{2}(10\underline{b}) + m(-5\underline{b} + 8\underline{a})$ $= (5 - 5m)\underline{b} + 8m\underline{a}$	K1	2	
		N1		
	b) $\overrightarrow{OT} = \overrightarrow{OS} + \overrightarrow{ST}$ $= \frac{1}{2}\overrightarrow{OQ} + n\overrightarrow{SP}$ $= \frac{1}{4}(8\underline{a}) + n(-2\underline{a} + 10\underline{b})$ $= (2 - 2n)\underline{a} + 10n\underline{b}$	K1		4
			2	
		N1		
9.	a) $\frac{1}{2}(18)^2\theta = 150$ $\theta = 0.9259 \text{ rad}$	K1		
		N1	2	
	b) $s = 18(2\pi - 0.9259)$ $18(2\pi - 0.9259) + 2(18)$ 132.45 cm	K1		5
		K1	3	
		N1		

NO	PENYELESAIAN	MARKAH		
10.	a)  $-2 < x < \frac{3}{2}$ b) $(-2n)^2 - 4(m)(5) = 0$ $n = \pm\sqrt{5m}$	K1 N1	2	4
11.	a) $y = \int 2x \, dx$ $y = x^2 + c$ $3 = 1^2 + c$ $c = 2$ $y = x^2 + 2$ b) $\int_2^3 (y-2)^{\frac{1}{2}} \, dy$ $\left[\frac{(y-2)^{\frac{3}{2}}}{\frac{3}{2}(1)} \right]_2^3$ $\left[\frac{(3-2)^{\frac{3}{2}}}{\frac{3}{2}(1)} \right] - \left[\frac{(2-2)^{\frac{3}{2}}}{\frac{3}{2}(1)} \right]$ $\frac{2}{3}$	K1 K1 N1	3	6
12.	a) ${}^7C_7 (p^7)(1-p)^0 = 0.04398$ $\log_{10} p^7 = \log_{10} 0.04398$ atau $p = \sqrt[7]{0.04398}$ $p = 0.64$ b) ${}^7C_0 (0.64)^0 (0.36)^7$ atau ${}^7C_1 (0.64)^1 (0.36)^6$ atau ${}^7C_2 (0.64)^2 (0.36)^5$ ${}^7C_0 (0.64)^0 (0.36)^7 + {}^7C_1 (0.64)^1 (0.36)^6 + {}^7C_2 (0.64)^2 (0.36)^5$ 0.06255	K1 N1 K1 N1	2 3	5
13.	(a) (i) ${}^3P_3 \times 3 \times {}^4P_2$ 216	K1 N1		

NO	PENYELESAIAN	MARKAH		
	(ii) ${}^4P_3 \times {}^3P_2 \times 3$ atau ${}^4P_4 \times {}^3P_1 \times 2$ atau ${}^4P_3 \times {}^3P_1 \times {}^1P_1 \times 2$ ${}^4P_3 \times {}^3P_2 \times 3 + {}^4P_4 \times {}^3P_1 \times 2 + {}^4P_3 \times {}^3P_1 \times {}^1P_1 \times 2$ 720	K1	5	8
	(b) $\frac{n(n-1)(n-2)!}{(n-r)(n-1-r)(n-2-r)!} = \frac{(n-2)!}{(n-2-r)!}$ $\frac{n(n-1)}{(n-r)(n-1-r)} = 1$ $n^2 - n = n^2 - n - nr - nr + r + r^2$ $0 = -2nr + r + r^2$ $2nr = r + r^2$ $n = \frac{r + r^2}{2r}$ $n = \frac{1+r}{2}$	K1	3	
14.	a) i) $\frac{dx}{dt} = 2t$ ii) $\frac{dy}{dx} = 14t^3 \times \frac{1}{2t}$ $\frac{dy}{dx} = 7t^2$ $\frac{dy}{dx} = 7(x-3)$	N1		3
	b) $2x + 2y = 18$ $y = 9 - x$ atau $2\pi j = x$ $j = \frac{x}{2\pi}$ $I = \pi j^2 t$ $= \pi \left(\frac{x}{2\pi}\right)^2 (y)$ $= \frac{\pi x^2}{4\pi^2} (y)$ $= \frac{1}{4\pi} x^2 (9 - x)$	K1		

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	$= \frac{9x^2}{4\pi} - \frac{x^3}{4\pi}$ $\frac{dI}{dx} = \frac{9x}{2\pi} - \frac{3x^2}{4\pi}$ $\frac{9x}{2\pi} - \frac{3x^2}{4\pi} = 0$ $\frac{x}{2\pi} \left(9 - \frac{3x}{2} \right) = 0$ $\frac{x}{2\pi} = 0$ <p>$x = 0$ tidak diterima kerana $x > 0$</p> $9 - \frac{3x}{2} = 0$ <p><i>Panjang/ Length = 6 dan Lebar/ Width = 3</i></p>	K1		
		K1	5	
		N1		
15.	<p>(a)</p> $ax^2 + bx + c = 0$ $x^2 + \frac{b}{a}x = -\frac{c}{a}$ $x^2 + \frac{b}{a}x + \left(\frac{b}{2a}\right)^2 = -\frac{c}{a} + \left(\frac{b}{2a}\right)^2$ $\left(x + \frac{b}{2a}\right)^2 = \frac{-4ac + b^2}{4a^2}$ $x + \frac{b}{2a} = \frac{\pm\sqrt{b^2-4ac}}{2a} \text{ atau } x = \frac{\pm\sqrt{b^2-4ac}}{2a} - \frac{b}{2a}$ $x = \frac{-b+\sqrt{b^2-4ac}}{2a} \text{ atau } x = \frac{-b-\sqrt{b^2-4ac}}{2a}$ $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	K1		
		K1	5	
		K1		
		N1		
	<p>(b)</p> $x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4(1)(5)}}{2(1)}$ $x = \frac{4 \pm \sqrt{-4}}{2}$ $x = \frac{4 \pm (\sqrt{4})(\sqrt{-1})}{2}$	K1		8
		K1		

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	$x = \frac{4 \pm 2i}{2}$ $x = \frac{4+2i}{2}, x = \frac{4-2i}{2}$ $x = 2 + i, x = 2 - i$	N1	3	