

**MODUL PINTAS
TINGKATAN 5**

3472/1

**MATEMATIK TAMBAHAN
Kertas 1**

2 jam

Dua jam

**PERATURAN PEMARKAHAN
MATEMATIK TAMBAHAN K1**

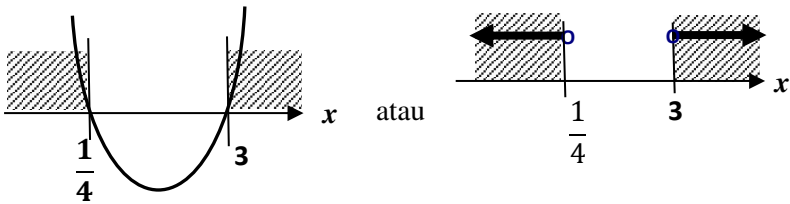
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NO	PENYELESAIAN	MARKAH		
1.	<p>(a)</p> $\frac{p^2}{3} \times 3^p \times 2^{-(p+2)} \times y^{-2p} \times y^{p+2} = q^1 y^{-2}$ $y^{-2p+p+2} = y^{-2}$ $-p + 2 = -2$ $p = 4$ $\frac{p^2}{3} \times 3^p \times \left(\frac{1}{2}\right)^{p+2} = q^1$ $q = \frac{27}{4}$	K1		
	<p>Bandungkan kuasa bagi y atau nilai pemalar dapat K1</p>	N1	4	
		K1		
		N1		7
	<p>(b)</p> $\log_x 3 = p: \quad x^p = 3$ $\log_y 2 = q: \quad y^q = 2$ $\log_z 5 = r: \quad z^r = 5$ <p>Mana-mana satu betul</p> $(x^p)(y^{2q}) - z^r = (3)(2)^2 - 5$ $= (3)(2)^2 - 5$ $= 7$	K1		
		K1	3	
		N1		
2.	$p = \frac{3}{4} - \frac{k}{2} \dots\dots\dots (1)$ $2k^2 - 10k = -5p + 7 \dots\dots\dots (2)$ <p>Gantikan (1) ke dalam (2)</p> $2k^2 - 10k = -5\left(\frac{3}{4} - \frac{k}{2}\right) + 7$ $2k^2 - 10k = -\frac{15}{4} + \frac{5k}{2} + 7$ $8k^2 - 40k = -15 + 10k + 28$ $8k^2 - 50k - 13 = 0$ $(2k - 13)(4k + 1) = 0$ $k = \frac{13}{2}, k = -\frac{1}{4}$ $p = -\frac{5}{2}, p = \frac{7}{8}$	K1		
		K1	4	4
		K1		
		N1		
		N1		

NO	PENYELESAIAN	MARKAH		
3.	<p>(a)</p> $a = 5000$ $r = 1.035$ $n = 10$ $T_{10} = 5000 \times 1.035^{10-1}$ $T_{10} = \text{RM}6814.49$ <p>(b)</p> $T_n > 7000$ $5000 \times 1.035^{n-1} > 7000$ $1.035^{n-1} > \frac{7000}{5000}$ $(n-1) \log_{10} 1.035 > \log_{10} 1.4$ $n-1 > \frac{\log_{10} 1.4}{\log_{10} 1.035}$ $n-1 > 9.7808$ $n > 10.7808$ $n = 11$	K1 N1	2	5
4.	<p>(a)</p> $\sin(x + 45^\circ) \sin(x - 45^\circ)$ $= (\sin x \cos 45^\circ - \cos x \sin 45^\circ)(\sin x \cos 45^\circ + \cos x \sin 45^\circ)$ $= \left(\frac{1}{\sqrt{2}} \sin x - \frac{1}{\sqrt{2}} \cos x\right) \left(\frac{1}{\sqrt{2}} \sin x + \frac{1}{\sqrt{2}} \cos x\right)$ $= \left(\frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}}\right) (\sin x - \cos x)(\sin x + \cos x)$ $= \frac{1}{2} \sin^2 x - \frac{1}{2} \cos^2 x$ $= \frac{1}{2} (-\cos 2x)$ $= -\frac{1}{2} \cos 2x$	K1 K1 K1	3	

NO	PENYELESAIAN	MARKAH		
	(b) $\tan 2x = -\frac{5}{12}$ $\frac{2\tan x}{1-\tan^2 x} = -\frac{5}{12}$ $24\tan x = -5 + 5\tan^2 x$ $0 = 5\tan^2 x - 24\tan x - 5$ $0 = (5\tan x + 1)(\tan x - 5)$ $\tan x = -\frac{1}{5}, 5 \text{ (tidak diterima/ not accepted)}$	P1 K1		
			4	
		K1 N1		
5.	(a) $y = 0,$ $x^2 + 3x - 8 = 0$ $x = \frac{-3 \pm \sqrt{3^2 - 4(1)(-8)}}{2(1)}$ atau $b^2 - 4ac = (3)^2 - 4(1)(-8)$ $x = 1.70$ atau $x = -4.70$ $= 41 > 0$ Locus R bersilang dengan paksi- x pada titik $(-4.70, 0)$ dan $(1.70, 0)$. <i>Locus R intersects the x-axis at $(-4.70, 0)$ and $(1.70, 0)$.</i> atau Locus R bersilang dengan paksi- x pada dua titik berbeza. <i>Locus R intersects the x-axis at two different points.</i>	K1 N1	3	
				7
	(b) $y = x - 2$ ——— (1) $x^2 + y^2 + 3x - 3y - 8 = 0$ ——— (2) Substitute (1) into (2), $x^2 + (x - 2)^2 + 3x - 3(x - 2) - 8 = 0$ $x^2 + x^2 - 4x + 4 + 3x - 3x + 6 - 8 = 0$ $2x^2 - 4x + 2 = 0$ $x^2 - 2x + 1 = 0$ atau $(x - 1)(x - 1) = 0$ $b^2 - 4ac$ $= (-2)^2 - 4(1)(1)$ $x = 1$ $= 0$ $y = x - 2$ ialah tangen kepada locus R . $y = x - 2$ is a tangent to the locus R .	K1 K1 K1 N1	4	

NO	PENYELESAIAN	MARKAH		
6.	a) i) $p = 3$ ii) $y = \frac{3}{x-3}$ $y(x-3) = 3$ $xy = 3 + 3y$ $x = \frac{3+3y}{y}$ $f(x) = \frac{3(1+x)}{x}, x \neq 0$ atau/ or $f(x) = \frac{3}{x} + 3, x \neq 0$	N1 K1 N1	3	6
	b) $\frac{x}{4} - \frac{a}{4} = 2bx + \frac{5}{8}$ $\frac{1}{4} = 2b$ atau $-\frac{a}{4} = \frac{5}{8}$ $b = \frac{1}{8}$ dan / and $a = -\frac{5}{2}$	K1 K1 N1	3	
7.	a) $\log_5 y = \log_5 625 - \log_5 x$ $\log_5 y = 4 - \log_5 x$ b) $h = 4$ $-1 = \frac{4-1}{0-k}$ atau $1 = -k + 4$ $k = 3$	N1 N1 K1 N1	1 3	4
8.	$\vec{AQ} = \lambda \vec{AC}$ $\vec{AB} = \frac{1}{3}(-9\underline{y})$ $\vec{BQ} = \frac{1}{4}(\vec{BD})$ $\vec{BQ} = \frac{1}{4}(\vec{BA} + \vec{AD})$ $\vec{BQ} = \frac{1}{4}(3\underline{y} + 4\underline{x})$ $\vec{AQ} = \vec{AB} + \vec{BQ}$ atau $\vec{AC} = \vec{AD} + \vec{DC}$ $\vec{AQ} = -\frac{9}{4}\underline{y} + \underline{x}$ $\vec{AQ} = 4\underline{x} - 9\underline{y}$ $-\frac{9}{4}\underline{y} + \underline{x} = \lambda(4\underline{x} - 9\underline{y})$ $\frac{-9}{4} = \lambda(-9)$ $1 = \lambda(4)$ $\lambda = \frac{1}{4}$ $\lambda = \frac{1}{4}$ <i>A, Q dan C adalah segaris / A, Q and C are colinear</i>	K1 K1 K1 N1	4	4

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9.	a) $\frac{1}{2}(17)^2\theta = 140$ $\theta = 0.9689 \text{ rad}$	K1 N1	2	5
	b) $2\pi - 0.9689$ $S = 17(2\pi - 0.9689) + 2(17)$ 124.36	P1 K1 N1	3	
10.	a)  $x < \frac{1}{4}, \quad x > 3$	K1 N1	2	4
	b) $(-2q)^2 - 4(2p)(6) = 0$ $q = \pm 2\sqrt{3p}$	K1 N1	2	
11.	a) $y = \int -2x \, dx$ $y = -x^2 + c$ $5 = -(2)^2 + c$ $c = 9$ $y = -x^2 + 9$	K1 K1 N1	3	6
	b) $\int_0^2 (-x^2 + 9) \, dx - (2 \times 5)$ $\left[\frac{-x^3}{3} + 9x \right]_0^2 - 10$ $\left[\left[\frac{-2^3}{3} + 9(2) \right] - \left[\frac{-0^3}{3} + 9(0) \right] \right] - 10$ $\frac{16}{3}$	K1 K1 N1	3	
12.	a) ${}^6C_6 (p^6)(1-p)^0 = 0.0248$ $\log_{10} p^6 = \log_{10} 0.04398$ atau $p = \sqrt[6]{0.0248}$ $p = 0.54$	K1 N1	2	

NO	PENYELESAIAN	MARKAH		
	b) ${}^6C_0(0.54)^0(0.46)^6$ atau ${}^6C_1(0.54)^1(0.46)^5$ $1 - ({}^6C_0(0.54)^0(0.46)^6 + {}^6C_1(0.54)^1(0.46)^5)$ 0.9238	K1 K1 N1	3	5
13.	(a) (i) ${}^3P_3 \times 3 \times {}^4P_2$ 216 (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 N1 K1 K1 N1	5	
	(b) $\frac{(n+1)!}{(n+1-4)!} = 4 \frac{n!}{(n-2)!}$ $\frac{(n+1)!}{(n-3)!} = 4 \frac{n!}{(n-2)!}$ $\frac{(n+1)!}{n!} = 4 \frac{(n-3)!}{(n-2)!}$ $\frac{(n+1)n!}{n!} = 4 \frac{(n-3)!}{(n-2)(n-3)!}$ $(n+1)(n-2) = 4$ $n^2 - n - 2 - 4 = 0$ $n^2 - n - 6 = 0$ $(n-3)(n+2) = 0$ $n = 3, n = -2$ (tidak diterima / <i>not accepted</i>)	K1 K1 N1	3	8
14.	a) i) $\frac{dx}{dt} = 4t$ ii) $\frac{dy}{dx} = 4t^3 \times \frac{1}{4t}$ $\frac{dy}{dx} = t^2$ $\frac{dy}{dx} = \frac{x+4}{2}$	N1 K1 N1	3	

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	<p>b) $2x + 2y = 25$</p> $y = \frac{25}{2} - x$ <p style="text-align: center;">atau</p> $2\pi j = x$ $j = \frac{x}{2\pi}$ $I = \pi j^2 t$ $= \pi \left(\frac{x}{2\pi}\right)^2 (y)$ $= \frac{\pi x^2}{4\pi^2} (y)$ $= \frac{1}{4\pi} x^2 \left(\frac{25}{2} - x\right)$ $= \frac{25x^2}{8\pi} - \frac{x^3}{4\pi}$ $\frac{dI}{dx} = \frac{25x}{4\pi} - \frac{3x^2}{4\pi}$ $\frac{25x}{4\pi} - \frac{3x^2}{4\pi} = 0$ $\frac{x}{4\pi} (25 - 3x) = 0$ $\frac{x}{4\pi} = 0$ <p>$x = 0$ tidak diterima kerana $x > 0$</p> $25 - 3x = 0$ <p>Panjang/Length = $\frac{25}{3}$, Lebar/Width = $\frac{25}{6}$</p>	K1		8
		K1		
		K1	5	
		K1		
		N1		

NO	PENYELESAIAN	MARKAH		
15.	<p>(a)</p> $ax^2 + bx + c = 0$ $x^2 + \frac{b}{a}x = -\frac{c}{a}$ $x^2 + \frac{b}{a}x + \left(\frac{b}{2a}\right)^2 = -\frac{c}{a} + \left(\frac{b}{2a}\right)^2$ $\left(x + \frac{b}{2a}\right)^2 = \frac{-4ac + b^2}{4a^2}$ $x + \frac{b}{2a} = \frac{\pm\sqrt{b^2-4ac}}{2a} \quad \text{atau} \quad x = \frac{\pm\sqrt{b^2-4ac}}{2a} - \frac{b}{2a}$ $x = \frac{-b+\sqrt{b^2-4ac}}{2a} \quad \text{atau} \quad x = \frac{-b-\sqrt{b^2-4ac}}{2a}$ $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	K1 K1 K1	5	8
	<p>(b)</p> $x = \frac{-(-6) \pm \sqrt{(-6)^2 - 4(5)(9)}}{2(5)}$ $x = \frac{6 \pm \sqrt{-144}}{10}$ $x = \frac{6 \pm (\sqrt{144})(\sqrt{-1})}{10}$ $x = \frac{6 \pm 12i}{10}$ $x = \frac{3 \pm 6i}{5}$ $x = \frac{3+6i}{5}, \quad x = \frac{3-6i}{5}$	K1 K1	3	

PERATURAN PEMARKAHAN TAMAT