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MODUL PINTAS
TINGKATAN 5

3472/1

MATEMATIK TAMBAHAN
Kertas 1

2 jam

Dua jam

PERATURAN PEMARKAHAN MATEMATIK TAMBAHAN K1 3472/1

NO	PENYELESAIAN	MARKAH		
1.	(a) $\frac{p^2}{3} \times 3^p \times 2^{-(p+2)} \times y^{-3p} \times y^{p+2} = q^1 y^{-2}$ $y^{-3p+p+2} = y^{-2}$ $-2p + 2 = -2$ $p = 2$ Bandingkan kuasa *y* atau nilai pemalar dapat K1 $\frac{p^2}{3} \times 3^p \times \left(\frac{1}{2}\right)^{p+2} = q^1$ $q = \frac{3}{4}$	K1 N1 K1 N1	4	**7**
	(b) $\begin{pmatrix} log_3 9 \\ log_3 \sqrt{y} \end{pmatrix} \begin{pmatrix} log_3 y \\ log_3 x \end{pmatrix} (log_3 x)$ $\left(\frac{2log_3 3}{\frac{1}{2} log_3 y}\right) \left(\frac{log_3 y}{log_3 x}\right) (log_3 x)$ 4	K1 K1 N1	3	
2.	$x = 7 - 2y$ ... ... (1) $\lvert x + y \rvert = 4$ ... ... (2) Gantikan (1) ke dalam (2) $\lvert 7 - 2y + y \rvert = 4$ $7 - y = \pm 4$ $y = 3, \quad y = 11$ $x = 1, \quad x = -15$	P1 K1 N1 N1	4	**4**

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3.	(a) $a = 15000$ dan $r = 1 + \frac{0.045}{2}$ $T_{11} = 15000\left(1 + \frac{0.045}{2}\right)^{10}$ $= \text{RM } 18738.05$	P1 K1 N1	3	**5**
	(b) $\text{RM } 18738.05 - RM\ 15000$ $= \text{RM } 3738.05$	K1 NI	2	
4.	(a) $\sin(x + 45^\circ)\sin(x - 45^\circ)$ $= (\sin x \text{kos} 45^\circ + \text{kos} x \sin 45^\circ)(\sin x \text{kos} 45^\circ - \text{kos} x \sin 45^\circ)$ $= \left(\frac{1}{\sqrt{2}}\sin x + \frac{1}{\sqrt{2}}\text{kos} x\right)\left(\frac{1}{\sqrt{2}}\sin x - \frac{1}{\sqrt{2}}\text{kos} x\right)$ $= \left(\frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}}\right)(\sin x + \text{kos} x)(\sin x - \text{kos} x)$ $= \frac{1}{2}\sin^2 x - \frac{1}{2}\text{kos}^2 x$ $= \frac{1}{2}(-\text{kos}2x)$ $= -\frac{1}{2}\text{kos}2x$	 K1 K1 K1	3	**7**
	(b) $\tan 2x = \frac{12}{5}$ $\frac{2\tan x}{1-\tan^2 x} = \frac{12}{5}$ $12 - 12\tan^2 x = 10\tan x$ $12\tan^2 x + 10\tan x - 12 = 0$ $6\tan^2 x + 5\tan x - 6 = 0$ $(2\tan x + 3)(3\tan x - 2) = 0$ $\tan x = \frac{2}{3},\ -\frac{3}{2}$ $\tan x < 0, \quad tanx = -\frac{3}{2}$	P1 K1 K1 N1	4	

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5.	(a) $y = 0$, $x^2 - 9x + 18 = 0$ $(x - 3)(x - 6) = 0$ atau $b^2 - 4ac = (-9)^2 - 4(1)(18)$ $x = 3$ atau $x = 6$ $= 9 > 0$ Lokus *R* bersilang dengan paksi-*x* pada titik (3, 0) dan (6, 0). *Locus R intersects the x – axis at point* (3, 0) *and* (6, 0). atau Lokus *R* bersilang dengan paksi-*x* pada dua titik berbeza. *Locus R intersects the x – axis at two different points.*	K1 N1 N1	3	**7**
	(b) $y = -3x + 8$ ——— (1) $x^2 + y^2 - 9x + y + 18 = 0$ ——— (2) Substitute (1) into (2), $x^2 + (-3x + 8)^2 - 9x + (-3x + 8) + 18 = 0$ $x^2 + 9x^2 - 48x + 64 - 9x - 3x + 8 + 18 = 0$ $10x^2 - 60x + 90 = 0$ $x^2 - 6x + 9 = 0$ atau $(x - 3)(x - 3) = 0$ $b^2 - 4ac$ $= (-6)^2 - 4(1)(9)$ $x = 3$ $= 0$ y = −3*x* + 8 ialah tangen kepada lokus *R*. *y = −3x + 8 is a tangent to the locus R.*	K1 K1 K1 N1	4	
6.	(a) i) $k = 3$ ii) $y = \frac{2}{3-x}$ $y(3 - x) = 2$ $-xy = 2 - 3y$ $x = \frac{-2+3y}{y}$ $h(x) = \frac{-2+3x}{x}$, $x \neq 0$	N1 K1 N1	3	**6**

NO	PENYELESAIAN	MARKAH		
	(b) $a\left(\frac{x+5}{2}\right)+b=4+3x$ $\frac{a}{2}=3$ atau $\frac{5a}{2}+b=4$ $a=6 \quad b=-11$	K1 K1 N1	3	
7.	(a) $\left[2y=(m-1)x+\frac{10}{x}\right]\frac{x}{2}$ $xy=\frac{(m-1)x^2}{2}+5$	N1	1	**4**
	(b) $\frac{m-1}{2}=-3$ atau $5n=5$ $m=-5$ $n=1$	K1 N1 N1	3	
8.	(a) $\overrightarrow{BC}$ = $-3\underline{x}+6\underline{y}$	N1	1	**4**
	(b) $\overrightarrow{AK}=\overrightarrow{AB}+\overrightarrow{BK}$ atau $\overrightarrow{AK}=\overrightarrow{AC}+\overrightarrow{CK}$ $=3\underline{x}+\frac{n}{n+2}\overrightarrow{BC}$ $=6\underline{y}+\left(\frac{-2}{n+2}\right)\overrightarrow{BC}$ $=3\underline{x}+\frac{n}{n+2}(-3\underline{x}+6\underline{y})$ $=6\underline{y}-\frac{2}{n+2}(-3\underline{x}+6\underline{y})$ $=\left(\frac{6}{n+2}\right)\underline{x}+\left(\frac{6n}{n+2}\right)\underline{y}$ $=\left(\frac{6}{n+2}\right)\underline{x}+\left(\frac{6n}{n+2}\right)\underline{y}$	K1 K1 N1	3	
9.	(a) $9=15\beta$ $\beta=0.6$ rad	K1 N1	2	**5**
	(b) $\frac{1}{2}(15)^2(0.6)$ atau / *or* $\frac{1}{2}(7.5)(15)sin34.37°$ $\frac{1}{2}(15)^2(0.6)-\frac{1}{2}(7.5)(15)sin34.37°$ 35.74	K1 K1 N1	3	

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10.	(a) $(2x-1)(x+3) \leq 0$ $-3 \leq x \leq \frac{1}{2}$	K1 N1	2	**4**
	(b) $(3q)^2 - 4(p)(4) = 0$ $q = \pm\frac{4\sqrt{p}}{3}$	K1 N1	2	
11.	(a) $\int_1^3 x\,dx - 2\int_1^3 g(x)dx$ $\left[\frac{x^2}{2}\right]_1^3 - 2(-10)$ 24	K1 K1 N1	3	**6**
	(b) $g(x) = \int 2x - 8\ dx$ $g(x) = \frac{2\,x^2}{2} - 8x + c$ $0 = 1^2 - 8(1) + c$ $c = 7$ $g(x) = x^2 - 8x + 7$	K1 K1 N1	3	
12.	(a) ${}^5C_5\,(p^5)(1-p)^0 = 0.16807$ $(p^5) = 0.16807$ $\log_{10} p^5 = \log_{10} 0.16807$ atau $p = \sqrt[5]{0.16807}$ $p = 0.7$	K1 N1	2	**5**
	(b) $\mathrm{P}(x=4) + \mathrm{P}(x=5)$ ${}^5C_4(0.7)^4(0.3)^1 + {}^5C_5(0.7)^5(0.3)^0$ 0.5282	K1 K1 N1	3	
13.	(a) (i) ${}^3P_3 \times 3 \times {}^4P_2$ 216	K1 N1	5	
	(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 K1 N1		

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	(b) $\frac{n(n-1)(n-2)!}{r!(n-r)(n-1-r)(n-2-r)!} = \frac{(n-2)!}{r!(n-2-r)!}$ $\frac{n(n-1)}{(n-r)(n-1-r)} = 1$ $n^2 - n = n^2 - n - nr - nr + r + r^2$ $0 = -2nr + r + r^2$ $2nr = r + r^2$ $n = \frac{r+r^2}{2r}$ $n = \frac{1+r}{2}$	K1 K1 N1	3	**8**
14.	(a) i) $\frac{dx}{dt} = 3t^2$ ii) $\frac{dy}{dx} = \frac{9t^5}{2} \times \frac{1}{3t^2}$ $\frac{dy}{dx} = \frac{3t^3}{2}$ $\frac{dy}{dx} = \frac{3(x+6)}{2}$	N1 K1 N1	3	
	(b) $\frac{dy}{dx} = 3(3-15x)^2(-15), \quad m = -5$ $-5 = -45(3-15x)^2$ $x = \frac{8}{45}$ atau $x = \frac{2}{9}$ $y = \left(3 - 15\left(\frac{8}{45}\right)\right)^3$ atau $y = \left(3 - 15\left(\frac{2}{9}\right)\right)^3$ $y = \frac{1}{27}$ atau $y = -\frac{1}{27}$ $\left(\frac{8}{45}, \frac{1}{27}\right)$ atau/*or* $\left(\frac{2}{9}, -\frac{1}{27}\right)$	K1 K1 N1 K1 N1	5	**8**

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15.	(a) $ax^2 + bx + c = 0$ $x^2 + \frac{b}{a}x = -\frac{c}{a}$ $x^2 + \frac{b}{a}x + \left(\frac{b}{2a}\right)^2 = -\frac{c}{a} + \left(\frac{b}{2a}\right)^2$ $\left(x + \frac{b}{2a}\right)^2 = \frac{-4ac + b^2}{4a^2}$ $x + \frac{b}{2a} = \frac{\pm\sqrt{b^2-4ac}}{2a}$ atau $x = \frac{\pm\sqrt{b^2-4ac}}{2a} - \frac{b}{2a}$ $x = \frac{-b+\sqrt{b^2-4ac}}{2a}$ atau $x = \frac{-b-\sqrt{b^2-4ac}}{2a}$ $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$	K1 K1 K1 N1 N1	5	**8**
	(b) $x = \frac{-(-6) \pm \sqrt{(-6)^2 - 4(9)(5)}}{2(9)}$ $x = \frac{6 \pm \sqrt{-144}}{18}$ $x = \frac{6 \pm (\sqrt{144})(\sqrt{-1})}{18}$ $x = \frac{6 \pm 12i}{18}$ $x = \frac{1 \pm 2i}{3}$ $x = \frac{1+2i}{3}$, $x = \frac{1-2i}{3}$	K1 K1 N1	3	