



**MODUL PINTAS
TINGKATAN 5**

**MATEMATIK TAMBAHAN
Kertas 1**

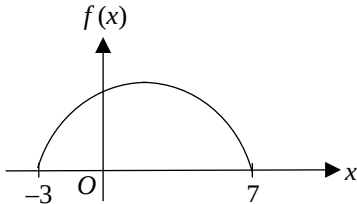
3472/1

2 jam

Dua jam

PERATURAN PEMARKAHAN MATEMATIK TAMBAHAN K1 3472/1

NO SOALAN		JAWAPAN	MARKAH
BAHAGIAN A			
1		$\sqrt{8pq} = \frac{4}{3}$ Selesaikan $\sqrt{8p(1-p)} = \frac{4}{3}$ sehingga pemfaktoran $(3p-1)(3p-2) = 0$ $p = \frac{1}{3}$	P1 K1 N1
			3
2		$m = \frac{9-0}{4-(-2)}$ $\log_2 y = \frac{3}{2} \log_2 x + c$ $9 = \frac{3}{2}(4) + c \quad @ \quad (9-c) = \frac{3}{2}(4-0)$ $c = 3$ $\log_2 y = \frac{3}{2} \log_2 x + 3$ $\log_2 y = \frac{3}{2} \log_2 x + \log_2 2^3$ $y = 8x^{\frac{3}{2}}$	K1 P1 K1 N1
			4
3	(a)	$a + (32-1)d = 105$ $a + (a+d) + (a+2d) = 45 \quad @ \quad \frac{3}{2}[2a + (3-1)d] = 45$ <u>Selesaikan persamaan serentak (hapus satu anu)</u> $30d = 90 \quad @ \quad 30a = 360$ $a = 12$	K1 K1 K1 N1
	(b)	$d = 3$ $\frac{32}{2} [*12 + 105] \quad @ \quad \frac{32}{2} [2(*12) + (32-1)(*3)]$ 1872	K1 N1
			6
4	(a)	Lihat $2^3 @ 2^5$ Guna $(a^m)^n = a^{mn}$ & $a^m \div a^n = a^{m-n}$ $2^{3(x-1)-5x}$ $\frac{1}{8(2^{2x})}$	P1 K1 N1
	(b)	Kembang $(\sqrt{2}-1)^2 @ (7+5\sqrt{2}) \times (3-2\sqrt{2})$ dalam 4 <u>sebutan</u> $h = (7+5\sqrt{2}) \times (3-2\sqrt{2})$ $1 + \sqrt{2}$	K1 K1 N1
			6

NO SOALAN			JAWAPAN	MARKAH	
5			$mx - m = 2x^2 + 3x - 3$ $2x^2 + (3 - m)x + m - 3 = 0$ <u>Guna $b^2 - 4ac > 0$</u> $(3 - m)^2 - 4(2)(m - 3) > 0$ <u>Pemfaktoran ketaksamaan quadartik & lakaran graf @ garis nombor @ jadual</u> $(m - 3)(m - 11) > 0$ &  $m < 3, m > 11$	K1 K1 K1 N1	
				4	
6	(a)		<u>Alternatif A</u> $-3 + 7 = -\frac{p}{-\frac{1}{2}}$ @ $(-3)(7) = \frac{2q}{-\frac{1}{2}}$ $p = 2$ dan $q = \frac{21}{4}$	<u>Alternatif B</u> Ganti $(-3, 0)$ dan $(7, 0)$ ke dalam $f(x)$ 	P1 N1
	(b)		$x = \frac{-3+7}{2}$ $x = 2$ $f(2) = -\frac{1}{2}(2)^2 + 2x + 2 \left(\frac{21}{4}\right)$ $= \frac{25}{2}$	K1 N1	
				4	
7			$\overrightarrow{AC} = \overrightarrow{AO} + \overrightarrow{OC}$ @ $\overrightarrow{CA} = \overrightarrow{CO} + \overrightarrow{OA}$ @ mana-mana segi tiga yang setara $\overrightarrow{AC} = (k\mathbf{i} - \mathbf{j}) - (-4\mathbf{i} + k\mathbf{j})$ @ $\overrightarrow{CA} = -(k\mathbf{i} - \mathbf{j}) + (-4\mathbf{i} + k\mathbf{j})$ $= (k + 4)\mathbf{i} + (-1 - k)\mathbf{j}$ $= (-k - 4)\mathbf{i} + (1 + k)\mathbf{j}$ $ \overrightarrow{AC} = \sqrt{(k + 4)^2 + (-1 - k)^2}$ $= \sqrt{2k^2 + 10k + 17}$	P1 K1 N1	
				3	
8	(a)		$\angle QSR = 1.2 \text{ rad.}$ $(8)(1.2)$ 9.6	K1 N1	
	(b)		$\frac{1}{2}(8)^2(1.2)$ @ $\frac{1}{2}(13.21)^2(0.6)$ @ $\frac{1}{2}(8)(13.21) \sin 0.6$ $L = \frac{1}{2}(8)^2(1.2) + \frac{1}{2}(8)(13.21) \sin 0.6 - \frac{1}{2}(13.21)^2(0.6)$ $= 15.88 \text{ cm}^2$ @ 15.87 cm^2	K1 K1 N1	
				5	

NO SOALAN		JAWAPAN	MARKAH
9	(a)	$f'(x) = (1)(x^2 - 9) + 2x(x - 3) @ \text{ kembang}$ $= 3x^2 - 6x - 9$	K1 N1
	(b)	$0 = 3(x - 3)(x + 1)$ $x = 3, x = -1$ $y = 0, y = 32$ $f''(x) = 6x - 6$ $f''(3) = 6(3) - 6$ atau $f''(-1) = 6(-1) - 6$ $= 12 > 0$ $= -12 < 0$ $(3, 0)$ ialah titik minimum dan $(-1, 32)$ ialah titik maksimum. $(3, 0)$ is a minimum point and $(-1, 32)$ is a maximum point.	K1 K1 N1
	(c)	$f(1) = 16, \delta x = 0.001$ $f'(1) = 3(1 - 3)(1 + 1)$ $= -12$ $\frac{\delta f(x)}{0.001} \approx -12$ $f(1.001) = 16 + (-0.012)$ $= 15.988$	K1 K1 N1
			8
10	(a)	$8 = a(5^2)$ $a = \frac{8}{25}$	K1 N1
	(b)	<u>Alternatif A</u> $\int_0^8 \frac{5\sqrt{y}}{\sqrt{8}} dy = \left[\frac{5y^{\frac{3}{2}}}{\sqrt{8}(\frac{3}{2})} \right]_0^8$ $\frac{1}{2}(12 + 8)(8) - 2 \times \int_0^8 \frac{5\sqrt{y}}{\sqrt{8}} dy$ $= 80 - 2 \times \left[\frac{5(8)^{\frac{3}{2}}}{\sqrt{8}(\frac{3}{2})} - \frac{5(0)^{\frac{3}{2}}}{\sqrt{8}(\frac{3}{2})} \right]$ $= 26\frac{2}{3}$ <u>Alternatif B</u> $\int_0^5 \frac{8x^2}{25} dx = \left[\frac{8x^3}{25(3)} \right]_0^5$ $2 \times \left[\int_0^5 \frac{8x^2}{25} dx - \frac{1}{2}(1)(4) + \frac{1}{2}(1)(4) \right]$ $= 2 \times \left[\frac{8(5)^3}{25(3)} - \frac{8(0)^3}{25(3)} \right]$ $= 26\frac{2}{3}$	K1 K1 K1 N1 K1 K1 N1
	(c)	$V = \pi \int_0^8 \frac{25y}{8} dy$ $= \pi \left[\frac{25}{8} \left(\frac{y^2}{2} \right) \right]_0^8$ $= \pi \left[\frac{25}{8} \left(\frac{8^2}{2} \right) - \frac{25}{8} \left(\frac{0^2}{2} \right) \right]$ $= 100\pi$	K1 N1
			8

NO SOALAN			JAWAPAN	MARKAH
11	(a)		$BD:DC = 1:3$ $\frac{1(9)+3x}{1+3} = 3 @ \frac{1(1)+3y}{1+3} = -2$ $B(1, -3)$	P1 K1 N1
	(b)		$\frac{y-(-2)}{x-3} \times \frac{y-1}{x-9} = -1$ $x^2 + y^2 - 12x + y + 25 = 0$	K1 N1
				5
12	(a)		$r + r + 4 = 30 @ \text{setara}$ $r = 13$	P1 N1
	(b)		${}^3C_1 \times {}^5C_2 @ {}^3C_2 \times {}^5C_1 @ {}^3C_2 \times {}^4C_2$ ${}^3C_1 \times {}^5C_2 + {}^3C_2 \times {}^5C_1 + {}^3C_2 \times {}^4C_2$ $= 63$	K1 K1 N1
	(c)		${}^2P_1 \times {}^4P_2 \times {}^3P_1 @ {}^2P_1 \times {}^4P_2 \times {}^2P_1$ ${}^2P_1 \times {}^4P_2 \times {}^3P_1 + {}^2P_1 \times {}^4P_2 \times {}^2P_1$ $= 120$	K1 K1 N1
				8
BAHAGIAN B				
13	(a)	(i)	$x = \cos \theta, y = \sin \theta$ $y^2 + x^2 = 1$ (Dilihat) $\sin^2 \theta + \cos^2 \theta = 1$	P1 N1
		(ii)	$\cos \theta = 0.1736$ $2(0.1736)^2 - 1$ $= -0.9397$	K1 N1
	(b)	(i)	$\cot A = \frac{1}{3}$	P1
		(ii)	$\frac{\tan A - \tan B}{1 + \tan A \tan B} = \frac{2}{3}$ $\frac{3 - \tan B}{1 + 3 \tan B} = \frac{2}{3}$ $\tan B = \frac{7}{9}$	P1 K1 N1
				8
14	(a)	(i)	0	N1
		(ii)	Guna hukum segi tiga cari $\overrightarrow{OQ}$ $\overrightarrow{OQ} = \overrightarrow{OP} + \overrightarrow{PQ}$ $\overrightarrow{PQ} = \overrightarrow{PR} + \overrightarrow{RQ}$ $= \begin{pmatrix} -1 \\ -15 \end{pmatrix} + \begin{pmatrix} 5 \\ 12 \end{pmatrix} @ \text{setara}$ $= \begin{pmatrix} 4 \\ -3 \end{pmatrix}$ $\overrightarrow{OQ} = \overrightarrow{OP} + \overrightarrow{PQ}$ $= \begin{pmatrix} 5 \\ 12 \end{pmatrix} + \begin{pmatrix} 4 \\ -3 \end{pmatrix} @ \text{setara}$ $= \begin{pmatrix} 9 \\ 9 \end{pmatrix}$ $Q(9, 9)$	P1 K1 K1 N1

NO SOALAN			JAWAPAN	MARKAH
	(b)	(i)	$(2 - 5)\underline{i} + (6 - 12)\underline{j} = t(-5\underline{i} + w\underline{j})$	P1
		(ii)	$-3 = -5t \quad @ \quad -6 = tw$ $t = \frac{3}{5} \quad \& \quad w = -10$	K1 N1
				8
15	(a)	(i)	$gf(x) = z$	P1
		(ii)	-2	P1
	(b)	(i)	$\frac{2(-2)+3}{(-2)-2} = a$ $a = \frac{1}{4}$	K1 N1
		(ii)	$f^{-1}(x) = \frac{2x+3}{x-2}$ $y = \frac{2x+3}{x-2}$ $y(x-2) = 2x+3$ $x = \frac{2y+3}{y-2}$ $f(x) = \frac{2x+3}{x-2}, x \neq 2$ $g\left(\frac{2x+3}{x-2}\right) = 3x-6$ $g(y) = 3\left(\frac{2y+3}{y-2}\right) - 6$ $g(x) = \frac{21}{x-2}, x \neq 2$	K1 N1 K1 N1
				8