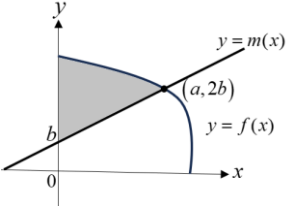


PERATURAN PEMARKAHAN
PEPERIKSAAN PERCUBAAN SPM TAHUN 2024
MATEMATIK TAMBAHAN (3472/1)
TINGKATAN 5
KERTAS 1

NO.	PERATURAN PEMARKAHAN	SUB-MARKAH	MARKAH PENUH
BAHAGIAN A			
1 (a)	$HTP = \frac{h^3 + 1}{h^2} \text{ atau } HDP = \frac{1}{h}$ $x^2 - \left(\frac{h^3 + 1}{h^2} \right) x + \frac{1}{h} = 0$ $h^2 x^2 - (h^3 + 1)x + h = 0$	K1 K1 N1	5
1 (b)	$(-1)^2 - 4(k - 2)(3) < 0$ $k > \frac{25}{12}$	K1 N1	
2(a)		N1	4
2(b)	$2n \text{ atau } \left[\frac{x^2}{2} \right]_1^m$ $2n - \left[\frac{m^2}{2} - \frac{1^2}{2} \right] = \frac{37}{2}$ $m = 2\sqrt{n - 9}$	K1 K1 N1	
3(a)	$1 - 2h = \pm 9 \text{ atau } 1 - 2k = \pm 9$ $k = -4$ $h = 5$	K1 N1 N1	

3(b)	$g^{-1}(x) = \frac{x-1}{m}$ ATAU setara $\frac{p-1-1}{m} = 8$ atau setara $m = \frac{p-2}{8}$	K1 K1 N1	6
4 (a)	${}^4C_0 (p)^0 (q)^4 = 0.0081$ 70	K1 N1	4
4 (b)	$1 - 0.0081 - 0.0756$ 0.9163	K1 N1	
5(a)	(i) 720 cara (ii) $\frac{2 \times 4! \times 4!}{2! \times 2!}$ 288	N1 K1 N1	6
5(b)	${}^7C_7 \times {}^5C_3$ atau ${}^7C_6 \times {}^5C_4$ atau ${}^7C_5 \times {}^5C_5$ ${}^7C_7 \times {}^5C_3 + {}^7C_6 \times {}^5C_4 + {}^7C_5 \times {}^5C_5$ 66	K1 K1 N1	
6 (a)	$3^{-n} (3^n 5^n - 3^n 9^n)$ atau setara $5^n - 9^n$	K1 N1	7
6 (b)	$2\sqrt{x} - \sqrt{x} = \frac{3}{\sqrt{a} - \sqrt{b}} \times \frac{\sqrt{a} + \sqrt{b}}{\sqrt{a} + \sqrt{b}}$ dan $x = \frac{9(\sqrt{a} + \sqrt{b})^2}{(a-b)^2}$ $h = \frac{9}{(a-b)^2}$	K1 N1	
6(c)	$\frac{e^{q-3}}{e^{-2}} = \frac{1}{5}$ $\ln e^{q-1} = \ln\left(\frac{1}{5}\right)$ dan $q = \ln\left(\frac{1}{5}\right) + 1$ $p = \frac{1}{5}$	P1 K1 N1	

7(a)	$AO = OC = CD = DO$ $\angle COD = \frac{\pi}{3} \text{ rad}$	N1	5
7(b)	Luas sektor $AOD = \frac{1}{2} \times 10^2 \times \frac{2\pi}{3}$ atau Luas sektor $COD = \frac{1}{2} \times 10^2 \times \frac{\pi}{3}$ Luas $\triangle AOD = \frac{1}{2} \times 10^2 \times \sin 60^\circ$ Luas kawasan berlorek = $2 \left[\frac{1}{2} \times 10^2 \times \frac{2\pi}{3} - \left(\frac{1}{2} \times 10^2 \times \frac{\pi}{3} - \frac{1}{2} \times 10^2 \times \sin 60^\circ \right) \right]$ 122.44 cm ²	K1 K1 K1 N1	
8	$x = \frac{5+3y}{2}$ atau setara $\left(\frac{5+3y}{2} \right)^2 - 4y^2 - y + 2 = 5$ atau setara $y = \frac{-26 \pm \sqrt{(26)^2 - 4(-7)(13)}}{2(-7)}$ atau setara $y = -0.446$ dan $y = 4.161$ $x = 1.831$ dan $x = 8.742$	P1 K1 K1 N1 N1	
9(a)	$\frac{y}{x^2} = r + n \left(\frac{1}{x^2} \right)$ $r = p + 3$ atau $n = 3p$ atau $p = r - 3$ $n = 3r - 9$	K1 N1 N1	



9(b)	$q = r + (3r - 9)(2)$ $q = 7r - 18$	K1 N1	5
10(a)	$1 - 2(0.1469)$ 0.7062	K1 N1	4
10(b)	$\frac{73.2 - \mu}{4} = 1.05$ $\mu = 69$	K1 N1	
11(a)	$\overrightarrow{AB} = \overrightarrow{AO} + \overrightarrow{OB}$ atau $\overrightarrow{BC} = \overrightarrow{BO} + \overrightarrow{OC}$ atau $\overrightarrow{AC} = \overrightarrow{AO} + \overrightarrow{OC}$ dan $\overrightarrow{AB} = \lambda \overrightarrow{BC}$ atau setara $\begin{pmatrix} 1 \\ 2 \end{pmatrix} = \lambda \begin{pmatrix} -2+m \\ 6 \end{pmatrix}$ dan $\lambda = \frac{1}{3}$ atau setara $m = 5$	P1 K1 N1	5
11(b)	$ \overrightarrow{BC} = \sqrt{3^2 + 6^2}$ Vektor unit dalam arah $\overrightarrow{BC} = \frac{3}{\sqrt{45}}\hat{i} + \frac{6}{\sqrt{45}}\hat{j}$ atau setara	K1 N1	
12 (a)	$\frac{1 - \sin^2 x}{1 - \sin x}$ $\frac{(1 - \sin x)(1 + \sin x)}{1 - \sin x}$	K1 N1	
12(b)	(i) $-\frac{1}{\sqrt{1-t^2}}$ (ii) $\frac{5}{\cos x \cos 180^\circ + \sin x \sin 180^\circ}$ $\frac{5}{t}$	N1 K1 N1	

12(c)	$(5 \sin x - 2)(2 \sin x - 1) = 0$ $\sin x = \frac{2}{5}$ dan $\sin x = \frac{1}{2}$ $x = 23.58^\circ, 30^\circ, 150^\circ, 156.42^\circ$	K1 K1 N1	8
BAHAGIAN B			
13(a)	$d = 4$ $T_{17} = 7 + (17 - 1)(4)$ 71	K1 K1 N1	8
13(b)	$ar^2 = 1405$ dan $ar^6 = 1700$ $\frac{1405}{r^2} = \frac{1700}{r^6}$ dan menyelesaikan $r = 1.0488$ $a = 1277.29$ atau 1277.30 $T_{15} = 1277.29(1.0488)^{15-1}$ RM 2488.78 atau RM 2488.80	P1 K1 N1 K1 N1	
14(a)	$\lim_{x \rightarrow 3} \frac{(x-3)(3+\sqrt{12-x})}{(3-\sqrt{12-x})(3+\sqrt{12-x})}$ dan $3+\sqrt{12-x}$ $3+\sqrt{12-3}$ 6	P1 K1 N1	8
14(b) (i)	$-3 = -3(-1)^2 - 2q(-1) + 4$ $q = -2$	K1 N1	
14(b) (ii)	$(-1, 2)$ $y - 2 = -3(x - (-1))$ atau setara $y = -3x - 1$	P1 K1 N1	

15(a)	$7x + 9 = x - 3$ Klinik $(-2, -5)$	K1 N1	
15(b)	Nisbah jarak masjid ke papan tanda = m Nisbah jarak rumah Aimi ke papan tanda = n $\frac{0(n) + 5m}{m + n} = 2$ atau $\frac{9(n) + 1(m)}{m + n} = \frac{29}{5}$ $m : n = 2 : 3$	K1 N1	
15(c) (i)	$\sqrt{(x - (-1))^2 + (y - 4)^2} = 3$ $x^2 + y^2 + 2x - 8y + 8 = 0$	K1 N1	
15(c) (ii)	Memotong paksi- x , $y = 0 : x^2 + 2x + 8 = 0$ dan $(2)^2 - 4(1)(8) = -28 < 0$ Tidak memotong paksi- x	K1 N1	

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PERATURAN PEMARKAHAN TAMAT