



**MAJLIS PENGETUA SEKOLAH MALAYSIA (MPSM)
CAWANGAN KELANTAN**

**PERCUBAAN SPM
2022**

**MATEMATIK TAMBAHAN
KERTAS 1**

UNTUK KEGUNAAN PEMERIKSA SAHAJA

**SKEMA
PEMARKAHAN**

PERATURAN PEMARKAHAN PEPERIKSAAN PERCUBAAN SPM TAHUN 2022

MATEMATIK TAMBAHAN (3472/1)

TINGKATAN 5

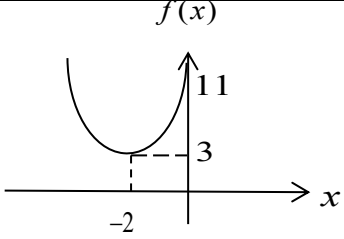
KERTAS 1

NO.	PERATURAN PEMARKAHAN	SUB-MARKAH	MARKAH PENUH
1 (a)	$3\sqrt{5}$	P1	4
1 (b)	$256^{\frac{1}{2x+1}}$ atau $512^{\frac{1}{2x+2}}$ atau 2^8 atau 2^9	K1	
	$\frac{8}{2x+1} = \frac{9}{2x+2}$ $x = \frac{7}{2}$	K1 N1	
2	$xy = \frac{1}{k}x^2 - \frac{h}{k}$ $\frac{1}{3} = \frac{1}{h}$ $\frac{-h}{k} = -2$ $h:k = 2:1$	P1 K1 K1 N1	4
3 (a)	$\cos\theta = -p$ $-\frac{1}{p}$	P1 N1	6
3 (b)	$\tan\theta = -\frac{q}{p}$ or $q = \sqrt{1-p^2}$ $\frac{1 + \left(-\frac{q}{p}\right)}{1 - \left(-\frac{q}{p}\right)}$ $\frac{p-q}{p+q}$	P1 K1 K1	

	$\frac{p - \sqrt{1-p^2}}{p + \sqrt{1-p^2}}$ atau SETARA	N1	
4 (a)	$(x+2)(x-2) < 0$ $-2 < x < 2$	K1 N1	5
4 (b)	$HTP = \alpha \times \frac{1}{\alpha} = \frac{2}{m}$ $(-5)^2 - 4(1)(1)$ 21	K1 K1 N1	
5	Let $x = a$ titik persilangan $(a, \frac{7-a^2}{2})$ $\int_{-a}^a \frac{7}{2} - \frac{x^2}{2} dx - (2a \times \frac{7-a^2}{2}) = \frac{2}{3}$ $\left[\frac{7x}{2} - \frac{x^3}{6} \right]_{-a}^a - (7a - a^3) = \frac{2}{3}$ $a = 1$ $y = p = \frac{7-1^2}{2} = 3$	K1 K1 N1 N1	4
6 (a)(i)	$\vec{LN} = \vec{LM} + \vec{MN}$ $\underline{a} - \underline{b}$	K1 N1	7
(ii)	$-2a - 6b$	N1	
6 (b)(i)	$\vec{OR} = 3 \begin{pmatrix} -3 \\ -2 \end{pmatrix} - 4 \begin{pmatrix} -1 \\ 1 \end{pmatrix}$ $R(-5, -2)$	K1 K1	7
(ii)	$ \vec{OR} = \sqrt{(-4)^2 + (-3)^2}$ 5	K1 N1	
7 (a)	$x^2 - 7x + 12 = 0$ $(x-3)(x-4) = 0$ $a = 3$ dan $b = 4$	K1 N1	7

7 (b)	let $\frac{x+1}{x+2} = y$, atau apa-apa huruf selain x dan m $x = \frac{2y-1}{1-y}$ $f(y) = \frac{\frac{2y-1}{1-y}}{\frac{2y-1}{1-y} + 3}$ $\frac{2m-1}{2-m} = 2$ $m = \frac{5}{4}$	K1 N1 K1 K1 N1	
8 (a)	$m_{AB} = -\frac{1}{2} \text{ (use } m_1 \times m_2 = -1)$ $y-3 = -\frac{1}{2}(x+10)$ $y = -\frac{x}{2} - 2$	K1 K1 N1	6
8 (b)	$-\frac{x}{2} - 2 = 2x - 7$ $x = 2$ $\text{Aina}(2, -3)$	K1 N1 N1	
9(a)	$xy, \frac{1}{4}xy, \frac{1}{16}xy \dots$ $r = \frac{1}{4}$	P1 N1	5
9(b)	$a = 12800$ $(12800) \left(\frac{1}{4}\right)^{n-1} = \frac{25}{512}$ $n = 10$	P1 K1 N1	

10	$2\log_a p + \log_a q = h$ atau $\log_a q - 3\log_a p = k$ $\log_a p = \frac{h-k}{5}$ $\log_a q = \frac{3h+2k}{5}$ $\frac{h-k}{5} - \left(\frac{3h+2k}{5}\right)$ $\frac{-2h-3k}{5}$	P1 K1 K1 K1 N1	5
11 (a)	$r^2 + 2r = 0$ $r = 0$ dan $r = -2$	K1 N1	6
11 (b)	Kes 1 (tiada secaman) ${}^7P_5 = 2520$ Kes 2 (hanya 1 secaman) $\frac{{}^2C_1 \times {}^5C_3 \times 5!}{2!} = 1200$ Kes 3 (2 secaman) $\frac{{}^2C_2 \times {}^5C_1 \times 5!}{2!2!} = 150$ 3870	K1 K1 K1 N1	
12 (a) (b)	sisihan piawai, $\sigma = \sqrt{npq} = \sqrt{100 \times 0.95 \times 0.05}$ $\frac{\sqrt{19}}{2} = 2.1794$ $P(X=1) = P(X=2)$ ${}^nC_1 (0.05)^1 (0.95)^{n-1} = {}^nC_2 (0.05)^2 (0.95)^{n-2}$ $n = \frac{{}^nC_2}{19}$ atau $19n = \frac{n!}{(n-2)!2!}$ $n = 39$	K1 N1 K1 K1 N1	5
13(a)	$a\left(x^2 + \frac{b}{a}x + \frac{c}{a}\right) = 0$ $(x-\alpha)(x-\beta) = 0$ $x^2 - (\alpha+\beta)x + \alpha\beta = 0$ $\alpha + \beta = -\frac{b}{a}$ $\alpha\beta = \frac{c}{a}$	P1 K1 K1 N1 N1	8

(b)	 <p>Graf minimum dan pintasan-$y=11$ Titik minimum $(-2,3)$ $f(x) = 2(x-1)^2 + 3$</p>	N1 N1 N1	
14(a)	$\frac{3(x+\delta x)^2 - 6(x+\delta x) + 5 - (3x^2 - 6x + 5)}{\delta x}$ $\lim_{\delta x \rightarrow 0} 6x + 3\delta x - 6$ $\frac{dy}{dx} = 6x - 6$	K1 K1 N1	
14(b)	$6x - 6 = 0$ $(1, 2)$	K1 N1	
14(c)	$m_{\text{tangen}} = 6(2) - 6$ $y - 5 = -\frac{1}{6}(x - 2)$ $y = -\frac{1}{6}x + \frac{16}{3}$	K1 K1 N1	8
15(a)	<p>(a) $\angle COD = 2 \sin^{-1} \left(\frac{8.66}{10} \right)$ atau 120° 2.095</p>	K1 N1	
15(b)	$S_{BD} = 10 \left(30 \times \frac{3.142}{180} \right) = 5.237$ Perimeter = $2(5.237) + 20 + 17.32$ 47.79 cm	K1 K1 N1	
15(c)	$\frac{1}{2} \times 10^2 \times \sin 120^\circ$ atau $2 \left(\frac{1}{2} \times 10^2 \times \left[30^\circ \times \frac{3.142}{180} \right] \right)$ $\frac{1}{2} \times 10^2 \times \sin 120^\circ$ + $2 \left(\frac{1}{2} \times 10^2 \times \left[30^\circ \times \frac{3.142}{180} \right] \right)$ 95.67 cm	K1 K1 N1	8