MAJLIS PENGETUA SEKOLAH MALAYSIA (MPSM) CAWANGAN KELANTAN

MODUL KOLEKSI ITEM
PERCUBAAN SPM
2023

MATEMATIK TAMBAHAN
KERTAS 1

UNTUK KEGUNAAN PEMERIKSA SAHAJA

SKEMA
PEMARKAHAN

PERATURAN PEMARKAHAN PEPERIKSAAN PERCUBAAN TAHUN 2023
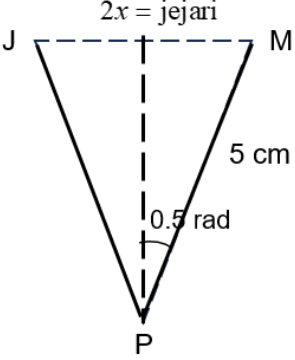
MATEMATIK TAMBAHAN (3472/1)

KERTAS 1

NO.	PERATURAN PEMARKAHAN	SUB-MARKAH	MARKAH PENUH
1	$0 = 2(-5)^2 + k(-5)$	K1	
	$k = 10$	N1	
	$\dfrac{y}{x} = 2x + k$	K1	
	$-6 = 2p + 10$ or $q = 2(-2) + 10$	K1	
	$p = -8$ dan $q = 6$	N1	5
2 (a)	$5p - 4 = -19$ atau setara ATAU $\|5x - 4\| = 0$	K1	
	$p = -3$	N1	
	$q = \dfrac{4}{5}$	N1	
2 (b)	$-(5x - 4) = 4$ atau setara	K1	
	$-3 \le x \le 0$	N1	5
3 (a)	$kos\ \theta = h$	P1	
	$h = 1 - 2\sin^2 \dfrac{\theta}{2}$	K1	
	$\dfrac{1 - h}{2}$	N1	
3 (b)	$8\sin^2 x - \sin x - 7 = 0$	K1	
	$\sin x = -\dfrac{7}{8}$ dan $\sin x = 1$	K1	6
	$x = 90^0, 241.04^0, 298.96^0$	N1	
4 (a)	$T_7 = a + (7-1)\left(\dfrac{1}{2}\right) = 13$	K1	
	$a = 10$	N1	

4 (b)	$S_n = \dfrac{10\left(1-(\frac{1}{2})^n\right)}{1-\frac{1}{2}}$ atau $T_{11} = 15$	K1	
	$S_n = \dfrac{10\left(1-(\frac{1}{2})^n\right)}{1-\frac{1}{2}} = 15$	K1	
	$\left(\dfrac{1}{2}\right)^n = \left(\dfrac{1}{2}\right)^2$ $\quad or \quad n\log_{10} 0.5 = \log_{10} 0.25$	K1	6
	$n = 2$	N1	
5 (a)	$27^{y+1} + 27^y$ atau $3^{3y+3} + 3^{3y}$ atau $(27+1)27^y$	K1	
	$a = 28$ dan $b = 27$	N1	
5 (b)	$\dfrac{\log_p (3-x)}{\log_p \sqrt{p}}$	P1	
	$5 + x^2 = (3-x)^2$	K1	5
	$x = \dfrac{2}{3}$	N1	
6 (a)	$1000x - x = 168$	K1	
	$x = \dfrac{56}{333}$	N1	
6 (b)	$\dfrac{\sqrt{6}}{\sqrt{12}-\sqrt{5}} \times \dfrac{\sqrt{12}+\sqrt{5}}{\sqrt{12}+\sqrt{5}}$	K1	
	$\dfrac{\sqrt{6\times12}+\sqrt{6\times5}}{\sqrt{12^2}-\sqrt{12\times5}+\sqrt{12\times5}-\sqrt{5^2}}$	K1 N1	5
	$p = 6$ dan $q = 30$		
7	$\dfrac{1}{2}(2x+10)(5x-20)\sin 30° = 1700$	K1	
	$x = \dfrac{-5 \pm \sqrt{5^2 - 4(5)(-3500)}}{2(5)}$	K1	
	$x = 26$	N1	
	62 m	N1	5
	110 m	N1	

8	$16a + 12 = 64a$	K1		
	$a = \dfrac{1}{4}$ and $p = 4$ (Both)	N1		
	$\pi \displaystyle\int_{4}^{16} 4y \; dy = \pi \left[2y^2 \right]_{4}^{16}$	K1		
	$\pi \left[2(16)^2 - 2(4)^2 \right]$	K1	5	
	480π	N1		
9. (a)	$\left| -\overrightarrow{OQ} \right| = \sqrt{3^2 + (-4)^2}$	K1		
	5 unit	N1		
9. (b)	$\overrightarrow{RQ} = \overrightarrow{RO} + \overrightarrow{OQ}$	K1	4	
	$-r + q$	N1		
10 (a)	$6!1!$ atau $2!2!2!$	P1		
	$\dfrac{6!1!}{2!2!2!}$	K1		
	90	N1		
10 (b)	(i) $\dfrac{5!}{(5-3)!3!}$ atau $\dfrac{5 \times 4 \times \cancel{3} \times \cancel{2} \times \cancel{1}}{2 \times 1 \times \cancel{3} \times \cancel{2} \times \cancel{1}}$	K1		
	10	N1		
	(ii) $^{1}C_1 \times {}^{3}C_1 \times {}^{6}C_1$ atau $^{1}C_1 \times {}^{6}C_2$	K1	7	
	33	N1		
11 (a)	$\dfrac{\delta y}{\delta x} = \dfrac{\delta y}{\delta u} \times \dfrac{\delta u}{\delta x}$	K1		
	$\displaystyle\operatorname*{had}_{\delta x \to 0} \dfrac{\delta y}{\delta x} = \operatorname*{had}_{\delta u \to 0} \dfrac{\delta y}{\delta u} \times \operatorname*{had}_{\delta x \to 0} \dfrac{\delta u}{\delta x}$	K1		
	$\dfrac{dy}{dx} = \dfrac{dy}{du} \times \dfrac{du}{dx}$	N1		

11 (b)	$\dfrac{dy}{dx} = 10t + 2$ or $\dfrac{dx}{dt} = -2$	K1	
	$\dfrac{dy}{dx} = (10t + 2) \times \dfrac{1}{-2}$	K1	6
	$\dfrac{dy}{dx} = \dfrac{5x - 7}{2}$	N1	
12 (a)	(i) $\quad {}^4C_4\left(p^4\right)\left(q^0\right)$ atau setara	K1	
	$\qquad p = \sqrt[4]{m}$	N1	
	(ii) $\quad P(X \geq 1) = 1 - P(X = 0)$	K1	
	$\qquad\qquad = 1 - k$	N1	
12 (b)	(i) 15	N1	
	(ii) 3	N1	
13 (a)	$y = \dfrac{2x^2 + 4x}{3}$	P1	
	$\dfrac{2x^2 + 4x}{3} < 10$	K1	
	$(x + 5)(x - 3) < 0$	K1	
		N1	
	$-5 < x < 3$		
13 (b)	$2\left[x^2 - 4x + \left(\dfrac{-4}{2}\right)^2 - \left(\dfrac{-4}{2}\right)^2 - 5\right]$	K1	
	$2(x - 2)^2 - 18$	N1	
	$a = 2$ dan $b = -2$ dan $c = -18$	N1	8
	Nilai minimum = -18	N1	

14 (a)	(i) $2 \times m_{AB} = -1$ dan $m_{AB} = \dfrac{-1}{2}$	K1	
	$y = \dfrac{-1}{2}x - 4$	N1	
	(ii) $2x - 9 = -\dfrac{1}{2}x - 4$	K1	
	$x = 2$	K1	
	$C = (2, -5)$	N1	
14 (b)	$B(7,5)$	P1	
	$\dfrac{1}{2}\left\|\left((0 \times 5) + (7 \times -5) + (2 \times -1) + (-6 \times 5)\right) - \left((5 \times 7) + (5 \times 2) + (-5 \times -6) + (-1 \times 0)\right)\right\|$	K1	8
	71 unit^2	N1	
15 (a)	$\sin 28.64^0 = \dfrac{x}{5}$ $x = 2.397$ cm	K1	
	Jejari $= 2(2.397) = 4.794$ cm	N1	
15 (b)	Panjang lengkok JKL $= 4.794(3.6) = 17.2584$ cm atau Panjang lengkok JM/ML $= 5\ (1)$	K1	
	Perimeter kawasan berlorek $= 17.2584 + 5 + 5$ $\hspace{4cm} = 27.2584$ cm	N1	

15 (c)	Luas sektor JKL $= \frac{1}{2}(4.794)^2(3.6) = 41.3684$ cm^2 atau		
	Luas segitiga PJM / QML $= \frac{1}{2}(5)^2 \sin 57.29^0 = 10.5177$ cm^2		
	atau	K1	8
	Luas sektor PJM $= \frac{1}{2}(5)^2(1) = 12.5$ cm²		
	Luas tembereng JM / ML $= 12.5 - 10.5177 = 1.9823$	K1	
	Luas Rantau Berlorek $= 41.3684 - 2(1.9823)$	K1	
	$= 37.4038$ cm^2	N1	