MODUL TOPIKAL
SOALAN PERCUBAAN SPM 2022

TOPIK TINGKATAN 4

BAB 7

GEOMETRI KOORDINAT
(*COORDINATE GEOMETRI*)

SUMBER SOALAN:

SOALAN – SOALAN PERCUBAAN

NEGERI SEMBILAN
SELANGOR SET A (MODUL PINTAS)
MELAKA
JOHOR (TANGKAK)
JOHOR (MUAR)
TERENGGANU
PUTRAJAYA

SKEMA JAWAPAN

DISUSUN OLEH:

PN. NOORUL HUDA BINTI MOHD HASHIM
(SMK TAMAN TASIK, TAIPING)

PN ZAINAB BINTI ABD RAHMAN
(SMK CONVENT, TAIPING)

SOALAN 1 : SOALAN PERCUBAAN SPM NEGERI SEMBILAN 2022 (KERTAS 1)

8	(a)	$\frac{1}{2}\lvert(q+8(-4)+3(6))-(6(8)+3q+1(-4))\rvert=36$	K1
		$-2q-58=72$ atau $-2q-58=-72$	K1
		$q=7$	N1
	(b)	$y-\frac{3}{2}=-\frac{5}{11}\left(x-\frac{11}{2}\right)$ ATAU	
		$\sqrt{(x-8)^2+(y-7)^2}=\sqrt{(x-3)^2+(y+4)^2}$	K1
		$y=-\frac{5}{11}x+4$	N1
			5 markah

SOALAN 3 : SOALAN PERCUBAAN NEGERI SELANGOR K1 (MODUL PINTAS SET A)

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 = −3x + 8 ialah tangen kepada lokus R. *y = −3x + 8 is a tangent to the locus R.*	K1 K1 K1 N1	4	

SOALAN 4 : SOALAN PERCUBAAN NEGERI SELANGOR K2 (MODUL PINTAS SET A)

10	(a)	$\frac{2-(-7)}{8-p} = -\frac{1}{\frac{10-2}{2-8}}$	K1	2	**10**
		$p = -4$	N1		
	(b)	$y-(-7) = -\frac{4}{3}(x-(-4))$	K1	3	
		$y = -\frac{4}{3}x - \frac{37}{3}$	N1		
		$q = 1$	N1		
	(c)	$\frac{1}{2}\lvert(-10)(-7)+(-4)2+8(10)+2(1)-1(-4)-(-7)(8)-(2)(2)-10(-10)\rvert$	K1	2	
		ATAU $\sqrt{(8-2)^2+(2-10)^2} \times \sqrt{(8-(-4))^2+(2-(-7))^2}$			
		150	N1		
	(d)	$\sqrt{(x-(-10))^2+(y-1)^2}$ atau $\sqrt{(x-8)^2+(y-2)^2}$	P1	3	
		$2\sqrt{(x-(-10))^2+(y-1)^2} = 3\sqrt{(x-8)^2+(y-2)^2}$	K1		
		$5x^2+5y^2-224x-28y+208=0$	N1		

SOALAN 5 : SOALAN PERCUBAAN SPM NEGERI MELAKA 2022 (KERTAS 1)

8(a) (i)	$C(x,y) = \left(\frac{2(-12)+1(3)}{1+2}, \frac{2(1)+1(7)}{1+2}\right)$	1	6	
	$= (-7,3)$	1		
(a) (ii)	$y-1 = \frac{2}{5}(x-(-12))$	1		
	$y = \frac{2}{5}x + \frac{29}{5}$ or equivalent	1		
8(b)	$\sqrt{(x-3)^2+(y-7)^2} = 6$	1		
	$x^2-6x+9+y^2-14y+49=36$			
	$x^2+y^2-6x-14y+22=0$	1		

SOALAN 6 : SOALAN PERCUBAAN SPM NEGERI MELAKA 2022 (KERTAS 2)

9	$m_{HG} = m_{EF} = 2$		
	$y-13=2(x-8)$	1	
	$y-13=2x-16$		
	$y=2x-3$	1	
	$m_{EH}=-\frac{1}{2}$	1	
	$y-3=-\frac{1}{2}\left(x-\left(-2\right)\right)$	1	
	$y-3=-\frac{1}{2}x-1$		
	$y=-\frac{1}{2}x+2$	1	
	$2x-3=-\frac{1}{2}x+2$	1	**10**
	$\frac{5}{2}x=5$		
	$x=2$		
	or		
	$y=2(2)-3$		
	$=1$		
	$H(2,1)$	1	
	Luas segi empat tepat $EFGH = 2\times\Delta EGH$		
	$=2\times\frac{1}{2}\begin{vmatrix}-2 & 8 & 2 & -2\\ 3 & 13 & 1 & 3\end{vmatrix}$	1	
	$=\left\lvert(-2)(13)+(8)(1)+(2)(3)-\left((3)(8)+(13)(2)+(1)(-2)\right)\right\rvert$	1	
	$=\lvert-12-48\rvert$		
	$=60\,unit^2$	1	

SOALAN 7 : SOALAN PERCUBAAN SPM NEGERI JOHOR K1 (TANGKAK)

8	(a)		$m_{AB} = \frac{5-1}{-9-3}$ dan $m_{PQ} = \frac{5-(-4)}{1-a}$	1	6
			$m_{AB} \times m_{PQ} = -1$		
			$\left(\frac{5-1}{-9-3}\right) \times \left(\frac{5-(-4)}{1-a}\right) = -1$		
			$\left(-\frac{4}{12}\right)\left(\frac{9}{1-a}\right) = -1$	1	
			$a = -2$	1	
	(b)		$m_{AB} = \frac{5-1}{-9-3} = -\frac{4}{12}$	1	
			$m_{AB} = -\frac{1}{3}$		
			$y-(-4) = -\frac{1}{3}[x-(-2)]$ atau $-4 = -\frac{1}{3}(-2)+c$	1	
			$y = -\frac{1}{3}x - \frac{14}{3}$	1	

SOALAN 8 : SOALAN PERCUBAAN SPM NEGERI JOHOR K2 (TANGKAK)

6 (a) $\sqrt{(x-5)^2+(y-2)^2} = \sqrt{(x-9)^2+(y-8)^2}$ — 1

$(x-5)^2+(y-2)^2 = (x-9)^2+(y-8)^2$

$x^2-10x+25+y^2-4y+4 = x^2-18x+81+y^2-16y+64$ — 1

$2x+3y-29=0$ — 1 — 3

(b) Lokus P memintas titik B sebab rombus,
Pada titik B, $(x,0)$

$2x+3(0)-29=0$

$x = 14.5$

Maka, titik B ialah (14.5, 0).
Katakan titik D ialah (a,b) , 5+9= a+14.5

ATAU cari titik D melalui titik tengah

a=- 0.5

2+8=b+0

b=10

Maka, D =(-0.5, 10) — 1

Luas rombus $= \frac{1}{2}\begin{vmatrix} 5 & 0 & 9 & -0.5 & 5 \\ 2 & 14.5 & 8 & 10 & 2 \end{vmatrix}$ atau setara

Luas rombus $= \frac{1}{2}|(5)(14.5)+(0)(8)+(9)(10)+(-0.5)(2)-(0)(2)-(14.5)(9)-(-0.5)(8)-(5)(10)|$ — 1

= 65 units — 1 — 3

(c) Katakan P=$2x+3y-29$ melalui titik R(10, 2).

P= 2(10)+3(2)-29 — 1

=-3 ≠ 0

Maka, Lokus P tidak melalui titik R(10,2). — 1 — 2

SOALAN 9 : SOALAN PERCUBAAN SPM NEGERI JOHOR K1 (MUAR)

8(a)	$(p,t) = (\frac{2h(3)+2p(2)}{2+3}, \frac{h(3)+3t(2)}{2+3})$	1	
	$p = \frac{6h+4p}{5}$ or $t = \frac{3h+6t}{5}$ or $h = \frac{-t}{3}$ or $p = \frac{6(\frac{-t}{3})+4p}{5}$	1	
	P = -2t	1	
(b)	$m_2 = \frac{-1}{3}$, B (-2,1)	1	
	$y - 1 = -\frac{1}{3}(x + 2)$	1	
	$y = -\frac{1}{3}x - \frac{2}{3} + 1$		6
	$y = -\frac{1}{3}x + \frac{1}{3}$ / ATAU kaedah Setara / OR other valid Method	1	

SOALAN 10 : SOALAN PERCUBAAN SPM NEGERI JOHOR K2 (MUAR)

6(a)	$Kecerunan, m_{AM} = -\frac{3}{2}$ $\therefore kecerunan, m_{BM} = \frac{2}{3}$ $\because y - 3 = \frac{2}{3}(x + 5)$ $y = \frac{2}{3}x + \frac{19}{3}$ $3y = 2x + 19$	 K1 N1
6(b)	$Koordinat\ C\ (-1, -3)$ $3k = 2(-8) + 19$ $k = 1$ $\therefore B(-8,1)$ $Luas = \frac{1}{2}\begin{vmatrix} -9 & 1 & -1 & -8 & -9 \\ 9 & 9 & -3 & 1 & 9 \end{vmatrix}$ $= \frac{1}{2}\lvert((-81) + (-3) + (-1) + (-72)) - (9 + (-9) + 24 + (-9))\rvert$ $= \frac{1}{2}\lvert -157 - 33\rvert$ $= \frac{1}{2}\lvert -190\rvert$ $= 95\ unit^2$	P1 @P1 K1 N1
6(c)	$\sqrt{(x - (-9))^2 + (y - 9)^2} = 10$ $(x - (-9))^2 + (y - 9)^2 = 10^2$ $x^2 + y^2 + 18x - 18y + 62 = 0$ $B(-8,1)$ $(-8)^2 + (1)^2 + 18(-8) - 18(1) + 62 = -35$ $-35 \neq 0$ $\therefore Titik\ B\ tidak\ berada\ di\ atas\ Bulatan\ Z$	K1 N1 N1
	JUMLAH	**8m**

SOALAN 11 : SOALAN PERCUBAAN SPM 2022 NEGERI TERENGGANU 2022 (KERTAS 1)

15

(a) $(-1,\ 1)$ dan $m=-2$ **P1**

$y-1=-2(x-(-1))$ atau $1=-2(-1)+c$ **K1**

$y=-2x-1$ **N1**

(b) $Q(0,-1)$ **K1**

$(-1,\ 1)=(\frac{0+x}{2},\frac{-1+y}{2})$

$-1=\frac{0+x}{2}$ atau $1=\frac{-1+y}{2}$ **K1**

$S(-2,3)$ **N1**

(c)

$A=\frac{1}{2}|((3\times 3)+(-2\times -1)+(-5\times -1)+(0\times 3))-((-2\times 3)+(-5\times 3)+(0\times -1)+(3\times -1))|$ **K1**

$20\ \text{unit}^2$ **N1**

8

SOALAN 12 : SOALAN PERCUBAAN SPM 2022 NEGERI TERENGGANU 2022 (KERTAS 2)

3

(a) $9-2x=\frac{x-2}{2}$ or $\frac{9-y}{2}=2y+2$ **K1**

$(4,1)$ **N1**

(b) $-2\times\frac{1}{2}=-1$ **K1**

berserenjang. **N1**

(c)

$\frac{12}{5}=\frac{0+4m}{m+n}$ atau $\frac{1}{5}=\frac{-n+m}{m+n}$ **K1**

$m:n=3:2$ **N1**

(d) Pagar (x,y) dan Menara Telekomunikasi (h,k)

$\sqrt{(x-h)^2+(y-k)^2}=1$ **K1**

$x^2+y^2-2hx-2ky+h^2+k^2-1=0$

$2h=4$ dan $2k=4$ **K1**

Koordinat Menara Telekomunikasi $(2,2)$ **N1**

9

SOALAN 13 : SOALAN PERCUBAAN SPM PUTRAJAYA 2022 (KERTAS 1)

7. (a) (i)	$p = -\frac{1}{2}$	N1	
(ii)	$2x + 6 = -\frac{1}{2}x - 4$ $\frac{5}{2}x = -10$ $x = -4$ $y = 2(-4) + 6$ $y = -2$ Coordinate H= $(-4, -2)$	K1 N1	3
(b)	$\frac{1}{2}\|(p-3)(1-3p) + 6p^2 - 3p(p-3)\| = 8$ $(p-3)(1-3p) + 6p^2 - 3p(p-3) = \pm 16$ $19p = 19$ $p = 1$ Atau $19p = -13$ $p = -\frac{13}{19}$	K1 N1 N1	3
			6 M

SOALAN 14 : SOALAN PERCUBAAN SPM PUTRAJAYA 2022 (KERTAS 2)

2	(a)	$\left(\frac{5-1}{-2+1}\right) \times M_{CB} = -1$	K1
		$m_{CB} = \frac{1}{4}$	
		$(y-5) = \frac{1}{4}(x+2)$ or $c = \frac{11}{2}$	K1
		$y = \frac{1}{4}x + \frac{11}{2}$ or $4y = x + 22$	N1
	(b)	$\frac{-2(3)+x}{4} = 0$ or $\frac{5(3)+y}{4} = \frac{11}{2}$	K1
		B (6, 7)	N1
	(c)	$\sqrt{(x-6)^2 + (y-7)^2} = 5$	K1
		$x^2 + y^2 - 12x - 14y + 60 = 0$	N1
			7M