

Penyelesaian Lengkap

Praktis 7

Praktis Formatif

$$1 \quad B = \left(\frac{2(-6) + 5(8)}{5 + 2}, \frac{2(11) + 5(4)}{5 + 2} \right)$$

$$B = (4, 6)$$

$$2 \quad PE = 3PF$$

$$\frac{PE}{PF} = \frac{3}{1}$$

$$PE : PF = 3 : 1$$

$$P = \left(\frac{3(7) + 1(-5)}{3 + 1}, \frac{3(-5) + 1(3)}{3 + 1} \right)$$

$$= (4, -3)$$

$$3 \quad (3, b) = \left(\frac{3a + 4(9)}{4 + 3}, \frac{4(5) + 3(-2)}{4 + 3} \right)$$

$$(3, b) = \left(\frac{3a + 36}{7}, 2 \right)$$

$$\frac{3a + 36}{7} = 3$$

$$3a + 36 = 21$$

$$3a = -15$$

$$a = -5$$

$$b = 2$$

$$4 \quad \text{Biar/Let } JK : KL = m : n$$

$$(-1, 4) = \left(\frac{-7n + 3m}{m + n}, \frac{-5n + 10m}{m + n} \right)$$

$$-1 = \frac{-7n + 3m}{m + n} \quad \text{atau/or} \quad 4 = \frac{-5n + 10m}{m + n}$$

$$-m - n = -7n + 3m \quad 4m + 4n = -5n + 10m$$

$$6n = 4m \quad 9n = 6m$$

$$\frac{m}{n} = \frac{3}{2}$$

$$m : n = 3 : 2$$

$$JK : KL = 3 : 2$$

$$5 \quad (a) \quad 2x - 6y + 18 = 0$$

Pada titik/At point R, $y = 0$,

$$2x + 18 = 0$$

$$2x = -18$$

$$x = -9$$

$$R = (-9, 0)$$

Pada titik/At point S, $x = 0$,

$$-6y + 18 = 0$$

$$6y = 18$$

$$y = 3$$

$$S = (0, 3)$$

$$(b) \quad T = \left(\frac{2(-9) + 1(0)}{1 + 2}, \frac{2(0) + 1(3)}{1 + 2} \right)$$

$$= (-6, 1)$$

$$6 \quad 2x + 5y = 20$$

$$5y = -2x + 20$$

$$y = -\frac{2}{5}x + 4$$

$$m = -\frac{2}{5}$$

$$y - 8 = -\frac{2}{5}(x + 3)$$

$$5y - 40 = -2x - 6$$

$$2x + 5y = 34$$

$$7 \quad m_1 = -\frac{4}{6}$$

$$= -\frac{2}{3}$$

$$-\frac{2}{3}m_2 = -1$$

$$m_2 = \frac{3}{2}$$

$$y - 0 = \frac{3}{2}(x - 6)$$

$$y = \frac{3}{2}x - 9$$

8 Titik tengah bagi UV/Midpoint of UV

$$= \left(\frac{-5 + 3}{2}, \frac{4 + 6}{2} \right)$$

$$= (-1, 5)$$

$$m_1 = \frac{6 - 4}{3 + 5}$$

$$= \frac{1}{4}$$

$$\frac{1}{4}m_2 = -1$$

$$m_2 = -4$$

$$y - 5 = -4(x + 1)$$

$$y = -4x - 4 + 5$$

$$y = -4x + 1$$

9 (a) $x + 2y = 8$

Pada titik/At point R, $x = 0, y = 4$

$$R = (0, 4)$$

Pada titik/At point T, $y = 0, x = 8$

$$T = (8, 0)$$

(b) $2y = -x + 8$

$$y = -\frac{1}{2}x + 4$$

$$m_1 = -\frac{1}{2}$$

$$m_2 = 2$$

$$y - 0 = 2(x - 8)$$

$$y = 2x - 16$$

(c) Pada titik/At point S, $y = 4$,

$$4 = 2x - 16$$

$$2x = 20$$

$$\therefore S = (10, 4)$$

$$10 \quad -\frac{x}{3} + \frac{y}{5} = 1$$

Pintasan- x/x -intercept = -3 Pintasan- x/x -intercept = 5
 $C = (-3, 0)$ $D = (0, 5)$

$$A_{CDE} = \frac{1}{2} \begin{vmatrix} -3 & 0 & -2 & -3 \\ 0 & 5 & 7 & 0 \end{vmatrix}$$

$$= \frac{1}{2} |-15 + 0 + 0 - 0 + 10 + 21|$$

$$= 8 \text{ unit}^2/\text{units}^2$$

$$11 \text{ (a)} \quad A_{PQR} = \frac{1}{2} \begin{vmatrix} 2 & 1 & -4 & 2 \\ 5 & -2 & 3 & 5 \end{vmatrix}$$

$$= \frac{1}{2} |2(-2) + 1(3) + (-4)(5) - (5)(1) - (-2)(-4) - 3(2)|$$

$$= \frac{1}{2} |-40|$$

$$= 20 \text{ unit}^2/\text{units}^2$$

$$(b) \quad PR = \sqrt{(1+4)^2 + (-2-3)^2}$$

$$= \sqrt{50}$$

$$\frac{1}{2} \times \sqrt{50} \times h = 20$$

$$h = 5.657 \text{ unit}/\text{units}$$

$$12 \quad \text{Luas/Area} = 33$$

$$\frac{1}{2} \begin{vmatrix} r & 2r & -1 & -2 & r \\ -3 & 0 & 5 & -6 & -3 \end{vmatrix} = 33$$

$$|0 + 10r + 6 + 6 - (-6r + 0 - 10 - 6r)| = 66$$

$$|22r + 22| = 66$$

$$22r + 22 = 66, \quad 22r + 22 = -66$$

$$22r = 44, \quad 22r = -88$$

$$r = 2, \quad r = -4$$

$$13 \quad CT = 4$$

$$\sqrt{(x-3)^2 + (y+1)^2} = 4$$

$$x^2 - 6x + 9 + y^2 + 2y + 1 = 16$$

$$x^2 + y^2 - 6x + 2y - 6 = 0$$

$$14 \quad AQ = BQ$$

$$\sqrt{(x-5)^2 + (y+2)^2} = \sqrt{(x+3)^2 + (y+0)^2}$$

$$x^2 - 10x + 25 + y^2 + 4y + 4 = x^2 + 6x + 9 + y^2$$

$$16x - 4y - 20 = 0$$

$$\div 4, 4x - y - 5 = 0$$

$$15 \quad \frac{y}{6} - \frac{x}{4} = 1$$

$Q(0, 6)$ dan/and $S(-4, 0)$

$$PQ : PS = 2 : 3$$

$$\frac{PQ}{PS} = \frac{2}{3}$$

$$3PQ = 2PS$$

$$3\sqrt{(x-0)^2 + (y-6)^2} = 2\sqrt{(x+4)^2 + (y-0)^2}$$

$$9(x^2 + y^2 - 12y + 36) = 4(x^2 + 8x + 16 + y^2)$$

$$9x^2 + 9y^2 - 108y + 324 = 4x^2 + 32x + 64 + 4y^2$$

$$5x^2 + 5y^2 - 32x - 108y + 260 = 0$$

$$16 \quad m_{KR} \times m_{RL} = -1$$

$$\left(\frac{y+5}{x-4}\right) \left(\frac{y-3}{x+1}\right) = -1$$

$$(y+5)(y-3) = -(x-4)(x+1)$$

$$(x-4)(x+1) + (y+5)(y-3) = 0$$

$$x^2 - 3x - 4 + y^2 + 2y - 15 = 0$$

$$x^2 + y^2 - 3x + 2y - 19 = 0$$

$$17 \text{ (a)}$$

$$AP = 2PB$$

$$\sqrt{(x-4)^2 + (y+6)^2} = 2\sqrt{(x+2)^2 + y^2}$$

$$x^2 - 8x + 16 + y^2 + 12y + 36 = 4(x^2 + 4x + 4 + y^2)$$

$$x^2 - 8x + y^2 + 12y + 52 = 4x^2 + 16x + 16 + 4y^2$$

$$3x^2 + 3y^2 + 24x - 12y - 36 = 0$$

$$\div 3, x^2 + y^2 + 8x - 4y - 12 = 0$$

(b) Pada paksi- y /At y -axis, $x = 0$

$$y^2 - 4y - 12 = 0$$

$$(y-6)(y+2) = 0$$

$$y = 6, y = -2$$

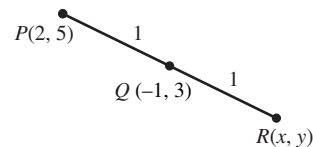
\therefore Koordinat/Coordinates = $(0, 6), (0, -2)$

Praktis Sumatif

Kertas 1

1 Kes 1: Q ialah titik tengah PR

Case 1: Q is the midpoint of PR



$$(-1, 3) = \left(\frac{2+x}{2}, \frac{5+y}{2}\right)$$

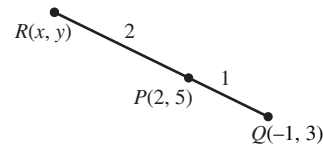
$$\frac{2+x}{2} = -1, \quad \frac{5+y}{2} = 3$$

$$x = -4, \quad y = 1$$

$\therefore R(-4, 1)$

Kes 2: P terletak di antara P dan R

Case 2: P lies between P and R



$$(2, 5) = \left(\frac{x+2(-1)}{2+1}, \frac{y+2(3)}{2+1}\right)$$

$$\frac{x-2}{3} = 2, \quad \frac{y+6}{3} = 5$$

$$x = 8, \quad y = 9$$

$\therefore R(8, 9)$

$$2 \text{ (a)} \quad y - 0 = 4(x - 2)$$

$$y = 4x - 8 \dots \textcircled{1}$$

$$(b) \quad \frac{1}{2} \begin{vmatrix} -1 & 2 & x & -1 \\ 2 & 0 & y & 2 \end{vmatrix} = 7$$

$$\frac{1}{2} [2y + 2x - (4 - y)] = 7$$

$$2x + 3y - 4 = 14$$

$$2x + 3y = 18 \dots \textcircled{2}$$

(c) Gantikan $\textcircled{1}$ ke dalam $\textcircled{2}$,

Substitute $\textcircled{1}$ into $\textcircled{2}$,

$$2x + 3(4x - 8) = 18$$

$$2x + 12x - 24 = 18$$

$$14x = 42$$

$$x = 3$$

Gantikan ke dalam ①,

Substitute into ①,

$$y = 4(3) - 8$$

$$y = 4$$

Maka, koordinat titik $C = (3, 4)$

Hence, the coordinates of point $C = (3, 4)$

3 (a) $3x - ky + 7 = 0$

$$ky = 3x + 7$$

$$y = \frac{3}{k}x + \frac{7}{k}$$

$$m_1 = \frac{3}{k}$$

$$hx + 6y = 11$$

$$6y = -hx + 11$$

$$y = -\frac{h}{6}x + \frac{11}{6}$$

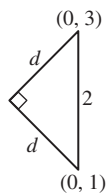
$$m_2 = -\frac{h}{6}$$

$$m_1 \times m_2 = -1$$

$$\left(\frac{3}{k}\right)\left(-\frac{h}{6}\right) = -1$$

$$h = 2k$$

(b)



$$d^2 + d^2 = 2^2$$

$$2d^2 = 4$$

$$d^2 = 2$$

$$d = \sqrt{2} \text{ unit/units}$$

4 (a) $m = \frac{10 - (-4)}{-9 - 12}$

$$= -\frac{2}{3}$$

$$y - 10 = -\frac{2}{3}(x + 9)$$

$$y = -\frac{2}{3}x - 6 + 10$$

$$y = -\frac{2}{3}x + 4$$

$$x = 2, y = -\frac{2}{3}(2) + 4$$

$$y = \frac{8}{3}$$

$$\neq 3$$

Dia tidak akan melalui stesen minyak itu.

He will not pass through the petrol station.

(b)

$$AP = 4$$

$$\sqrt{(x - 4)^2 + (y + 1)^2} = 4$$

$$x^2 - 8x + 16 + y^2 + 2y + 1 = 16$$

$$x^2 + y^2 - 8x + 2y + 1 = 0$$

5 (a) $ky = x - 11$

$$y = \frac{1}{k}x - \frac{11}{k}$$

$$m_1 = \frac{1}{k}$$

$$m_2 = -k$$

$$y + 3 = -k(x - 2)$$

$$y = -kx + 2k - 3$$

$$kx + y = 2k - 3$$

$$\frac{kx}{2k - 3} + \frac{y}{2k - 3} = 1$$

$$\frac{x}{2 - \frac{3}{k}} + \frac{y}{2k - 3} = 1$$

$$\text{Pintasan-}x/\text{x-intercept} = 2 - \frac{3}{k}$$

$$\text{Pintasan-}y/\text{y-intercept} = 2k - 3$$

$$P\left(2 - \frac{3}{k}, 0\right), Q(0, 2k - 3)$$

(b) $A_{OJK} = \frac{1}{2}(2)(3)$

$$A_{JKL} = \frac{1}{2} \begin{vmatrix} 0 & 3 & p & 0 \\ 2 & 0 & q & 2 \end{vmatrix}$$

$$= \frac{1}{2}[3q + 2p - 6]$$

$$\frac{1}{2}[3q + 2p - 6] = \frac{1}{2}(2)(3)$$

$$3q + 2p - 6 = 6$$

$$3q + 2p = 12$$

$$2p = 12 - 3q$$

$$p = 6 - \frac{3}{2}q$$

Kertas 2

1 (a) $6x + 4y + 24 = 0$

Pada paksi- x /At x -axis, $y = 0$, $6x + 24 = 0$
 $x = -4$

$$\therefore P(-4, 0)$$

Pada paksi- y /At y -axis, $x = 0$, $4y + 24 = 0$
 $y = -6$

$$\therefore Q(0, -6)$$

$$R = \left(\frac{-4 + 0}{2}, \frac{0 - 6}{2}\right)$$

$$= (-2, -3)$$

(b) $4y = -6x - 24$

$$y = -\frac{3}{2}x - 6$$

$$m_1 = -\frac{3}{2}$$

$$-\frac{3}{2}m_2 = -1$$

$$m_2 = \frac{2}{3}$$

$$y + 3 = \frac{2}{3}(x + 2)$$

$$y = \frac{2}{3}x + \frac{4}{3} - 3$$

$$y = \frac{2}{3}x - \frac{5}{3}$$

$$2 \text{ (a) } y - 5 = \frac{1}{2}(x - 4)$$

$$y = \frac{1}{2}x + 3$$

Pada titik/At point D , $x = 0$, $y = 3$
 $\therefore D = (0, 3)$

$$(b) \text{ Luas/Area} = 13$$

$$\frac{1}{2} \begin{vmatrix} 0 & m & 4 & 0 \\ 3 & 0 & 5 & 3 \end{vmatrix} = 13$$

$$0 + 5m + 12 - (3m + 0 + 0) = 26$$

$$2m + 12 = 26$$

$$2m = 14$$

$$m = 7$$

$$(c) \frac{PD}{PF} = \frac{PF}{PF}$$

$$\sqrt{(x-0)^2 + (y-3)^2} = \sqrt{(x-7)^2 + (y-0)^2}$$

$$x^2 + y^2 - 6y + 9 = x^2 - 14x + 49 + y^2$$

$$14x - 6y - 40 = 0$$

$$\div 2, 7x - 3y - 20 = 0$$

$$3 \text{ (a) } m_{OC} = \frac{3-0}{6-0}$$

$$= \frac{1}{2}$$

$$\frac{1}{2} m_{BC} = -1$$

$$m_{BC} = -2$$

$$y - 3 = -2(x - 6)$$

$$BC: y = -2x + 15 \dots \textcircled{1}$$

$$m_{AB} = \frac{1}{2}$$

$$AB: y = \frac{1}{2}x + 5 \dots \textcircled{2}$$

Gantikan $\textcircled{1}$ ke dalam $\textcircled{2}$ /Substitute $\textcircled{1}$ into $\textcircled{2}$,

$$-2x + 15 = \frac{1}{2}x + 5$$

$$\times 2, -4x + 30 = x + 10$$

$$5x = 20$$

$$x = 4$$

Gantikan ke dalam $\textcircled{1}$ /Substitute into $\textcircled{1}$,

$$y = -2(4) + 15$$

$$= 7$$

Koordinat/Coordinates of $B = (4, 7)$

$$(b) \text{ Luas/Area} = \frac{1}{2} \begin{vmatrix} 0 & 0 & 4 & 6 & 0 \\ 0 & 5 & 7 & 3 & 0 \end{vmatrix}$$

$$= \frac{1}{2} |12 - (20 + 42)|$$

$$= 25 \text{ km}^2$$

$$4 \text{ (a) } 3y = x - 6$$

$$x - 3y = 6$$

$$\frac{x}{6} - \frac{y}{2} = 1$$

Pintasan- y /y-intercept = -2

$$\therefore B = (0, -2)$$

Pintasan- x /x-intercept = 6

$$\therefore C = (6, 0)$$

$$(b) \text{ Biar/Let } A = (p, q)$$

$$(0, -2) = \left(\frac{2p + 1(6)}{1 + 2}, \frac{2q + 1(0)}{1 + 2} \right)$$

$$\frac{2p + 6}{3} = 0, \quad \frac{2q}{3} = -2$$

$$p = -3$$

$$q = -3$$

$$\therefore A = (-3, -3)$$

$$(c) m_{AD} \times m_{DC} = -1$$

$$\left(\frac{k+3}{0+3} \right) \left(\frac{k-0}{0-6} \right) = -1$$

$$k^2 + 3k = 18$$

$$k^2 + 3k - 18 = 0$$

$$(k+6)(k-3) = 0$$

$$k > 0, \therefore k = 3$$

$$5 \text{ (a) Titik tengah/Midpoint of JK}$$

$$= \left(\frac{-1+3}{2}, \frac{4+2}{2} \right) = (1, 3)$$

$$m_{JK} = \frac{4-2}{-1-3} = -\frac{1}{2}$$

$$-\frac{1}{2} m_2 = -1$$

$$m_2 = 2$$

$$y - 3 = 2(x - 1)$$

$$y = 2x - 2 + 3$$

$$y = 2x + 1$$

$$(b) y = -3, -3 = 2x + 1$$

$$2x = -4$$

$$x = -2$$

$$\therefore M(-2, -3)$$

$$(c) A = \frac{1}{2} \begin{vmatrix} -1 & 3 & 2 & -2 & -1 \\ 4 & 2 & -3 & -3 & 4 \end{vmatrix}$$

$$= \frac{1}{2} |-2 - 9 - 6 - 8 - (12 + 4 + 6 + 3)|$$

$$= \frac{1}{2} |-50|$$

$$= 25 \text{ unit}^2/\text{units}^2$$

$$6 \text{ (a) } PT = 2TR$$

$$\frac{PT}{TR} = \frac{2}{1}$$

$$PT : TR = 2 : 1$$

$$T = \left(\frac{2(5) + 1(-4)}{2+1}, \frac{2(4) + 1(-2)}{2+1} \right)$$

$$= (2, 2)$$

$$(b) m_{PR} = \frac{4+2}{5+4}$$

$$m_{PR} = \frac{2}{3}$$

$$\frac{2}{3} m_{QS} = -1$$

$$m_{QS} = -\frac{3}{2}$$

$$y - 2 = -\frac{3}{2}(x - 2)$$

$$y - 2 = -\frac{3}{2}x + 3$$

$$y = -\frac{3}{2}x + 5$$

$$(c) y = -\frac{3}{2}x + 5$$

Pintasan- y /y-intercept, $c = 5$

$$Q(0, 5)$$

$$A_{PQRS} = 2 \times A_{PQR}$$

$$A_{PQRS} = 2 \times \frac{1}{2} \begin{vmatrix} -4 & 0 & 5 & -4 \\ -2 & 5 & 4 & -2 \end{vmatrix}$$

$$= |-20 + 0 - 10 - (0 + 25 - 16)|$$

$$= 39 \text{ unit}^2/\text{units}^2$$

(d) $PW : PT = 3 : 2$

$$\frac{PW}{PT} = \frac{3}{2}$$

$$2PW = 3PT$$

$$2\sqrt{(x+4)^2 + (y+2)^2} = 3\sqrt{(2+4)^2 + (2+2)^2}$$

$$4(x^2 + 8x + 16 + y^2 + 4y + 4) = 9(52)$$

$$4x^2 + 32x + 4y^2 + 16y + 80 = 468$$

$$4x^2 + 4y^2 + 32x + 16y - 388 = 0$$

$$x^2 + y^2 + 8x + 4y - 97 = 0$$

7 (a) (i) $m_{OA} = \frac{6-0}{-3-0}$

$$m_{OA} = -2$$

$$m_{BC} = -2$$

$$y - 0 = -2(x - 5)$$

$$y = -2x + 10 \dots \textcircled{1}$$

(ii) $x + 3y - 15 = 0 \dots \textcircled{2}$

Gantikan $\textcircled{1}$ ke dalam $\textcircled{2}$ /Substitute $\textcircled{1}$ into $\textcircled{2}$,

$$x + 3(-2x + 10) - 15 = 0$$

$$x - 6x + 30 - 15 = 0$$

$$5x = 15$$

$$x = 3$$

Gantikan ke dalam $\textcircled{1}$ /Substitute into $\textcircled{1}$,

$$y = -2(3) + 10$$

$$= 4$$

$$\therefore B = (3, 4)$$

(b) (i) Daripada $\textcircled{2}$, pada paksi- x , $y = 0$,

From $\textcircled{2}$, At x -axis, $y = 0$,

$$x - 15 = 0$$

$$x = 15$$

$$\therefore D = (15, 0)$$

(ii) Biar/Let $AB : BD = m : n$

$$(3, 4) = \left(\frac{-3n + 15m}{m + n}, \frac{6n + 0}{m + n} \right)$$

$$4 = \frac{6n + 0}{m + n}$$

$$4m + 4n = 6n$$

$$4m = 2n$$

$$\frac{m}{n} = \frac{1}{2}$$

$$m : n = 1 : 2$$

$$\therefore AB : BD = 1 : 2$$

8 (a) $AP = 3$

$$\sqrt{(x-2)^2 + (y+5)^2} = 3$$

$$x^2 - 4x + 4 + y^2 + 10y + 25 = 9$$

$$x^2 + y^2 - 4x + 10y + 20 = 0 \dots \textcircled{1}$$

(b) Gantikan/Substitute $M(2, -8)$,

$$LHS = 2^2 + (-8)^2 - 4(2) + 10(-8) + 20$$

$$= 4 + 64 - 8 - 80 + 20$$

$$= 0$$

$$= RHS \text{ (Tertunjuk/Shown)}$$

(c) $AQ = BQ$

$$\sqrt{(x-2)^2 + (y+5)^2} = \sqrt{(x+4)^2 + (y-1)^2}$$

$$x^2 - 4x + 4 + y^2 + 10y + 25 = x^2 + 8x + 16 + y^2 - 2y + 1$$

$$12x - 12y - 12 = 0$$

$$\div 12, x - y - 1 = 0$$

(d) $y = x - 1 \dots \textcircled{2}$

Gantikan $\textcircled{2}$ ke dalam $\textcircled{1}$ /Substitute $\textcircled{2}$ into $\textcircled{1}$,

$$x^2 + (x-1)^2 - 4x + 10(x-1) + 20 = 0$$

$$x^2 + x^2 - 2x + 1 - 4x + 10x - 10 + 20 = 0$$

$$2x^2 + 4x + 11 = 0$$

$$b^2 - 4ac = (4)^2 - 4(2)(11)$$

$$= -72 (< 0)$$

\therefore Tidak bersilang/Does not intersect