

No.: Latihan Soal halaman 159

Date:

☐ Tentukan :

☐ d. Koordinat pusat

f. Panjang Sumbu minor

☐ b. Koordinat puncak

g. Panjang Latus rektum

☐ c. Nilai eksentrisitas

h. Persamaan sumbu simetri

☐ d. Koordinat Fokus

i. Persamaan direktris.

☐ e. Panjang Sumbu mayor

☐ Soal :

☐ 1. $\frac{x^2}{25} + \frac{y^2}{9} = 1$

☐ a. Pusat : (0,0)

d. Fokus $\rightarrow c = a \cdot e$

☐ b. Puncak :

$= 8 \cdot \frac{4}{8}$

☐ $A_1 = (5,0) \quad A_2 = (-5,0)$

$= 4$

☐ $B_1 = (0,3) \quad B_2 = (0,-3)$

$F_1 = (4,0) \quad F_2 = (-4,0)$

☐ e. Eksentrisitas

e. $A_1 A_2 = 2(5)$

$= 10$

☐ $e = \frac{1}{a} \sqrt{a^2 - b^2}$

☐ $= \frac{1}{5} \sqrt{25 - 9}$

f. $B_1 B_2 = 2(3)$

$= 6$

☐ $= \frac{1}{5} \sqrt{16}$

g. $|L L_1| = \frac{2b^2}{a} = \frac{2(3)^2}{5} = \frac{18}{5}$

☐ $= \frac{4}{5}$

☐ h = Sumbu x dan Sumbu y

☐ i. $x = \frac{25}{4}, x = -\frac{25}{4}$ atau $x = \frac{125}{4}$ dan $-\frac{125}{4}$

☐ 2. $\frac{(x-1)^2}{9} + \frac{(y-5)^2}{36} = 1$

Puncak $\rightarrow (4,5) \quad (1,11)$

$(-2,5) \quad (1,-1)$

☐ d. Pusat (1,5)

c. $e = \sqrt{1 - \frac{a^2}{b^2}}$

☐ b. Puncak

$= \sqrt{1 - \frac{9}{36}}$

☐ $(p+a, q) \quad (p, q+b)$

☐ $(p-a, q) \quad (p, q-b)$

$= \sqrt{\frac{27}{36}}$

$= \sqrt{\frac{3}{4}}$
 $= \frac{1}{2} \sqrt{3}$

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d. Fokus $\rightarrow$ 

$$F_1 (p, q + be) = (1, 5 + 3\sqrt{3})$$



$$F_2 (p, q - be) = (1, 5 - 3\sqrt{3})$$



$$e. B_1 B_2 = 2b$$



$$= 2(6)$$



$$= 12$$



$$j. A_1 A_2 = 2a$$



$$= 2(3)$$



$$= 6$$

$$g. 2b(1-e)^2$$

$$2(6) \left(1 - \frac{1}{2}\sqrt{3}\right)^2$$

$$12 \left(1 + \frac{3}{4} - \sqrt{3}\right)$$

$$12 \left(\frac{7}{4} - \sqrt{3}\right) =$$

$$= (21 - 12\sqrt{3})$$

$$h. \text{Sumbu } x = 1 \text{ dan Sumbu } y = 5$$

$$i. F_1 \rightarrow y = \frac{q+b}{e} = \frac{5+6}{\frac{1}{2}\sqrt{3}} = \frac{11 \cdot 2\sqrt{3}}{3}$$

$$= \frac{22\sqrt{3}}{3}$$

$$y = \frac{q-b}{e} = \frac{5-6}{\frac{1}{2}\sqrt{3}} = \frac{-1 \cdot 2\sqrt{3}}{3} = -\frac{2\sqrt{3}}{3}$$

$$3. 25x^2 + 9y^2 - 50x + 72y - 56 = 0$$

$$\rightarrow 25x^2 - 50x + 9y^2 + 72y = 56$$

$$5 \cdot (x^2 - 2x) + 9(y^2 + 8y) = 56$$

$$5[(x-1)^2 - 1] + 9[(y+4)^2 - 16] = 56$$

$$5(x-1)^2 + 9(y+4)^2 = 56 + 25 + 144$$

$$25(x-1)^2 + 9(y+4)^2 = 225$$

$$\frac{(x-1)^2}{9} + \frac{(y+4)^2}{25} = 1$$

$$i). F_1 \rightarrow y = \frac{q+b}{e} = \frac{-4+6}{4/5}$$

$$= \frac{10}{4}$$

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

$$F_2 \rightarrow \frac{q-b}{e} = \frac{-4-6}{4/5} = -\frac{50}{4}$$

$$= -\frac{25}{2}$$

$$a. \text{Pusat} = (1, -4)$$

d. Fokus $\rightarrow$

b. Puncak

$$\bullet (p+a, q) = (4, -4)$$

$$\bullet (p-a, q) = (-2, -4)$$

$$\bullet (p, q+b) = (1, 1)$$

$$\bullet (p, q-b) = (1, -9)$$

$$F_1 (p, q+be) = 1, -4 + 8 \cdot \frac{4}{5} = (1, 0)$$

$$F_2 (p, q-be) = 1, -4 - 8 \cdot \frac{4}{5} = (1, -8)$$

$$e. B_1 B_2 = 2b = 2(5)$$

$$= 10$$

$$f. A_1 A_2 = 2a = 2(3)$$

$$= 6$$

$$c. e = \sqrt{1 - \frac{a^2}{b^2}}$$

$$= \sqrt{1 - \frac{9}{25}}$$

$$= \frac{\sqrt{16}}{5}$$

$$= \frac{4}{5}$$

$$g). 2b(1-e)^2 = 2(5) \left(1 - \frac{4}{5}\right)^2$$

$$= 10 \left(\frac{1}{5}\right)^2$$

$$= 10 \cdot \frac{1}{25}$$

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

$$h). \text{Sumbu } x = 1 \text{ dan } y = -4.$$