TUGAS KELOMPOK

MINGGU 8

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IPB UNIVERSITY

DEPARTEMEN STATISTIKA 2022

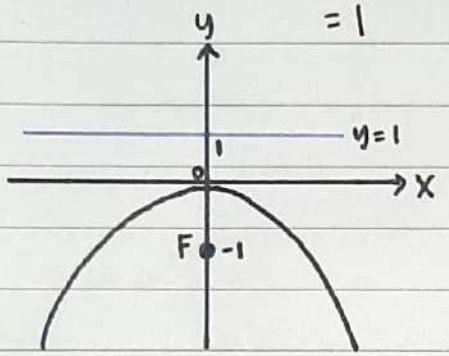
1. a. $4y + x^2 = 0$

$x^2 = -4y$

$x^2 = 4(-1)y$

Maka $p = -1$

* Titik puncak : $(0,0)$
* Titik fokus : $(0,p)$
  : $(0,-1)$
* Direktriks : $y = -p$
  $y = -(-1)$
  $= 1$

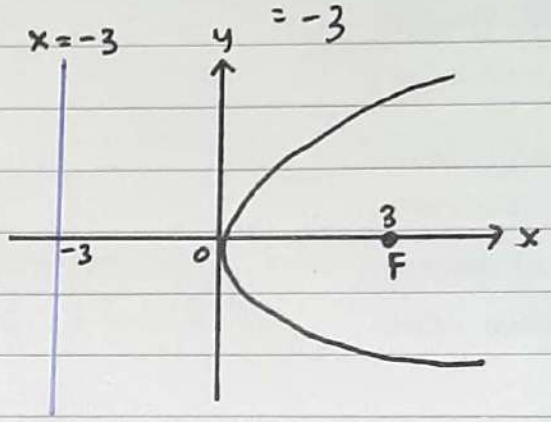


b. $y^2 = 12x$

$y^2 = 4(3)x$

Maka $p = 3$

* Titik puncak : $(0,0)$
* Titik fokus : $(p,0)$
  : $(3,0)$
* Direktriks : $x = -p$
  $= -(3)$
  $= -3$



② Tentukan titik puncak, fokus, dan keksentrikan dari elips berikut, serta gambarlah grafiknya.

a) $\frac{x^2}{64} + \frac{y^2}{100} = 1$

Titik puncak $(0, \pm 10)$

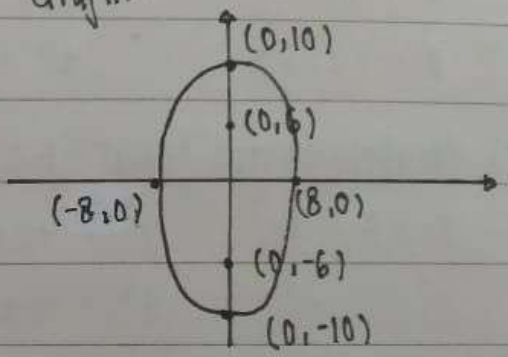
Fokus $(0, \pm 6)$

$a = 10 \quad b = 8$

$e = c/a = 6/10 = 3/5$

$c = \sqrt{100 - 64} = 6$

Grafik:



b) $25x^2 + 9y^2 = 225$

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

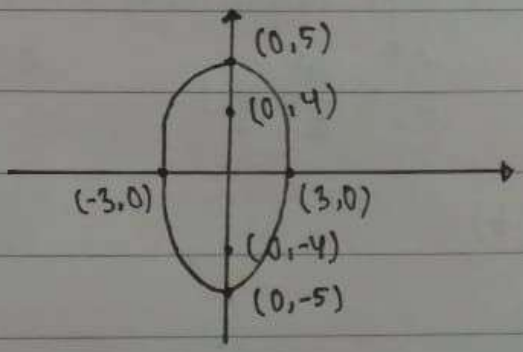
Titik puncak $(0, \pm 5)$

$a = 5 \quad b = 3$

Fokus $(0, \pm 4)$

$c = \sqrt{25 - 9} = 4$

$e = 4/5$



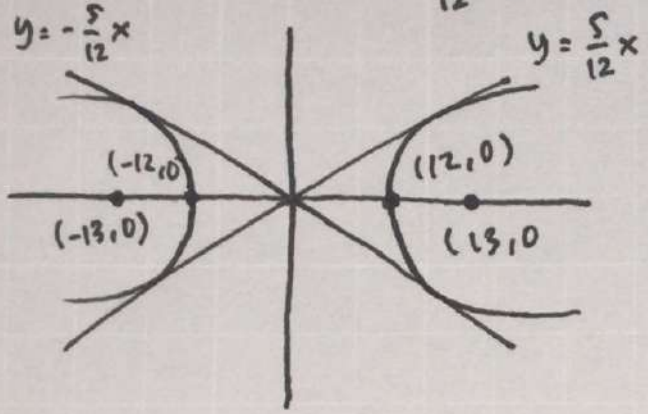
3. a. $\frac{x^2}{144} - \frac{y^2}{25} = 1$

$\frac{x^2}{12^2} - \frac{y^2}{5^2} = 1$

$a = 12$ $\quad c = \sqrt{12^2 + 5^2}$

$b = 5$ $\quad c = \sqrt{169} = 13$

* Fokus : $(\pm 13, 0)$
* Puncak : $(\pm 12, 0)$
* asimtot : $y = \pm \frac{5}{12} x$



b. $9y^2 - x^2 = 9$

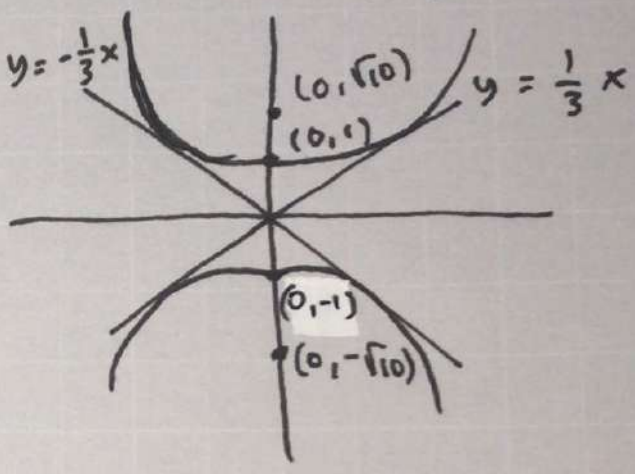
$\frac{9y^2}{9} - \frac{x^2}{9} = \frac{9}{9}$

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

$a = 1$ $\quad c = \sqrt{1^2 + 3^2}$

$b = 3$ $\quad = \sqrt{10}$

* Fokus : $(0, \pm\sqrt{10})$
* Puncak : $(0, \pm 1)$
* Asimtot : $y = \pm \frac{1}{3} x$



4. a). TP (0, 0). Fokus (0, -2)

$x^2 = 4py$ $\quad$ $p = -2$

$= 4(-2)y$

$x^2 = -8y$

4) b. Parabola dengan fokus (1,0) dan diretriks $x=-1$

Fokus (1,0)

diretriks ($x=-1$)

$p=1$

$y^2 = 4px$

$y^2 = 4(1) \cdot x$

$y^2 = 4x$

$y^2 - 4x = 0$

(5) Tentukan persamaan irisan kerucut berikut:

(a). Elips dgn fokus $(\pm 2, 0)$ dan titik puncak $(\pm 5, 0)$

c $\quad$ a

$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$

$\frac{x^2}{25} + \frac{y^2}{21} = 1$

$21x^2 + 25y^2 = 525$

$c^2 = a^2 - b^2$

$4 = 25 - b^2$

$b^2 = 21$

$b = \sqrt{21}$

6) Tentukan persamaan irisan kerucut berikut:

a. Hiperbola dengan fokus $(0, \pm 3)$ & titik puncak $(0, \pm 1)$

$c = 3$

$a = 1$

$b = \sqrt{c^2 - a^2}$

$= \sqrt{3^2 - 1^2}$

$= \sqrt{8}$

persamaan:

$\frac{y^2}{a^2} - \frac{x^2}{b^2} = 1$

$\frac{y^2}{1^2} - \frac{x^2}{(\sqrt{8})^2} = 1$

$\frac{y^2}{1} - \frac{x^2}{8} = 1 \rightarrow -x^2 + 8y^2 - 8 = 0$ //

6.b

Titik puncak = $(\pm 3,0) = (\pm a, 0)$

Garis asymtot $y = \pm 2x = \pm\left(\frac{b}{a}\right)x$

$a = 3$

$\frac{b}{a} = 2$

$b = 2 \times 3 = 6$

$c = \sqrt{(a^2 + b^2)} = \sqrt{3^2 + 6^2}$

$c = 3\sqrt{5}$

Sehingga didapatkan persamaan sebagai

$$\frac{x^2}{9} - \frac{y^2}{36} = 1$$

Grafik