Pop Quiz 5 - 2206820352 - Juan Maxwell Tanaya

1b. $4x^2+6y^2=36$ $\quad y=0, x=\pm 3$ $\quad x=0, y=\pm\sqrt{6}$

$\frac{4x^2}{36}+\frac{6y^2}{36}=1$

$\frac{x^2}{9}+\frac{y^2}{6}=1$ → Elips Horizontal karena nilai penyebut terbesar berada di bawah variable x sehingga elips melebar secara horizontal

$a^2=9$

$b^2=6$

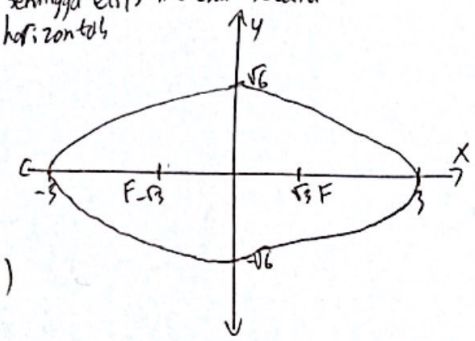
$c^2=a^2+b^2$

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

$3=c^2$

$\sqrt{3}=c$

Foci : ~~$(0,\pm\sqrt{3})$~~ $(0,\pm\sqrt{3})$



2a. 2b. $y^2=\frac{1}{5}x$ → $x=0, y=\pm\sqrt{\frac{1}{5}}$ $\quad y=0, x=0$

$y^2=4px$

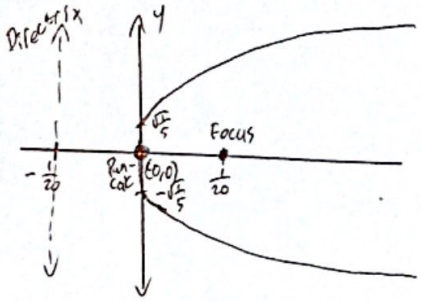
$4p=\frac{1}{5}$

$p=\frac{1}{20}$

Focus : $(\frac{1}{20},0)$

Puncak : $(0,0)$

Directrix : $(-\frac{1}{20},0)$



3a. $9x^2+4y^2=36$ & $9x^2-4y^2=36$

$\frac{x^2}{4}+\frac{y^2}{9}=1$ & $\frac{x^2}{4}-\frac{y^2}{9}=1$

let $f=\frac{x^2}{4}+\frac{y^2}{9}=1$

Karena bentuk $\frac{x^2}{b^2}+\frac{y^2}{a^2}=1$ adalah bentuk persamaan umum elipsis, maka dengan major axis vertical

~~Foci f = c~~ $\quad c^2=a^2-b^2$

$c^2=9-4$

$c=\pm\sqrt{5}$

Foci $f=(0,\pm\sqrt{5})$

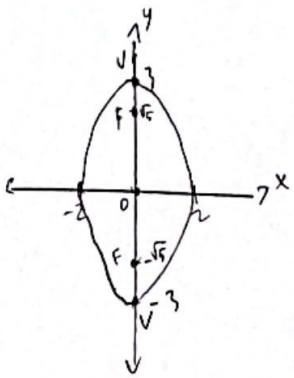
Vertices $f=(0,\pm 3)$

$\frac{x^2}{4}+\frac{y^2}{9}=1$

Jika $x=0$, $y=\pm 3$

~~Jika $y=0$, $x=\pm 2$~~

~~Jika $y=\pm 3$, $x=\pm 2$~~



lanjutan no. 3

$g=\frac{x^2}{4}-\frac{y^2}{9}=1$

Karena $\frac{x^2}{b^2}-\frac{y^2}{a^2}=1$ merupakan bentuk persamaan umum hiperbola de horizontal, maka

$c^2=a^2+b^2$

$c^2=4+9$

$c=\pm\sqrt{13}$

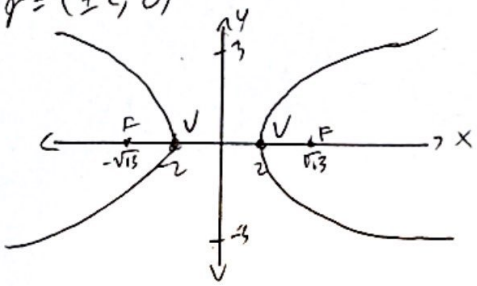
Foci $g=(\pm\sqrt{13},0)$

$\frac{x^2}{4}-\frac{y^2}{9}=1$ → ~~$y=0, x=\pm 2$~~

~~$x=0, y=\pm 3$~~

~~$x=\pm 2, y=\pm 3$~~

Vertices $g=(\pm 2,0)$



Perbedaan persamaan f dan g adalah persamaan f merupakan elips sehingga $0<e<1$, sedangkan persamaan g merupakan hiperbola sehingga $e>1$.

4b. $(y-1)^2=8(x-2)$

$(y-k)^2=4p(x-h)$

$4p=8$ $\quad$ Vertex = (h,k)

$p=2$ $\quad$ (puncak) = $(2,1)$

Focus = $(h+p,k)$

$=(4,1)$

~~Directrix = $(k-p,k)$~~

~~$(0,1)$~~

Directrix $= h-p$

$= 0$