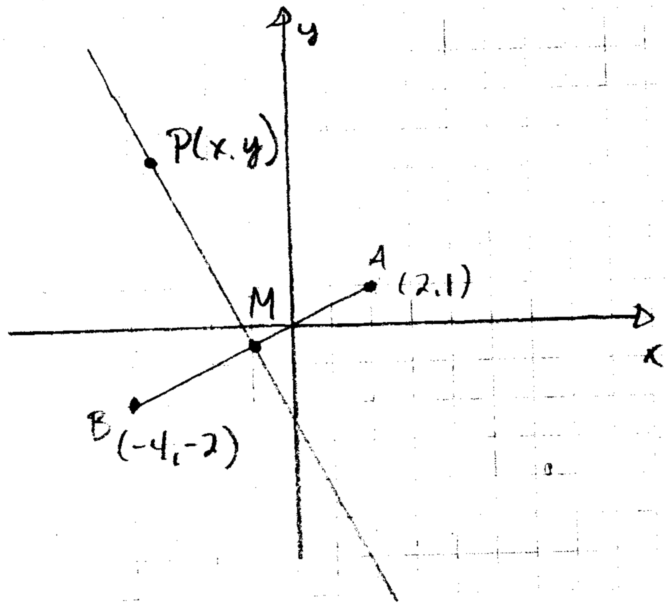
CAPSULE 11 : Les coniques (P. 388)

1_

2_

3_



Milieu de $\overline{AB} = \frac{2-4}{2} = -1$

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

$M : \left(-1, -\frac{1}{2}\right)$

Equation $\overline{AB}$: pente $\frac{1--2}{2--4} = \frac{3}{6} = \frac{1}{2}$

$y = \frac{1}{2}x + b \Rightarrow 1 = \frac{1}{2} \cdot 2 + b \Rightarrow b = 0$

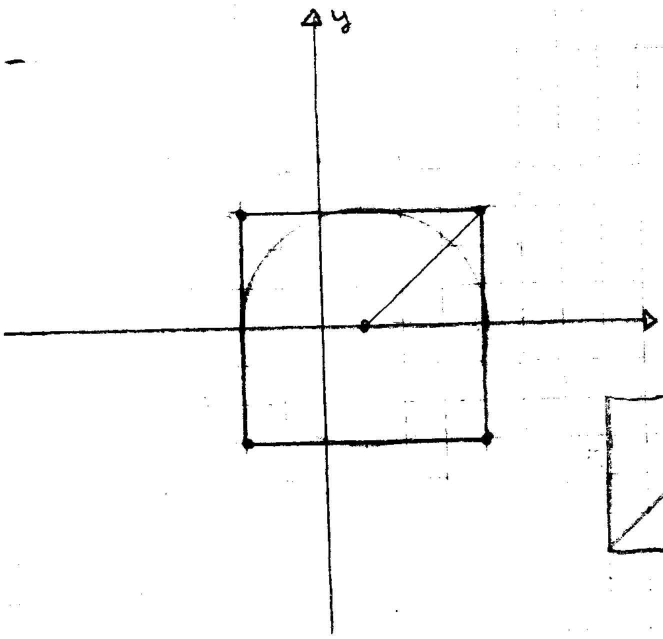
$y = \frac{1}{2}x$

Equation $\overline{MP}$: pente -2 (moin inverse de $\frac{1}{2}$)

$y = -2x + b \Rightarrow -\frac{1}{2} = -2 \cdot -1 + b \Rightarrow -\frac{1}{2} = 2 + b \Rightarrow b = -2,5$

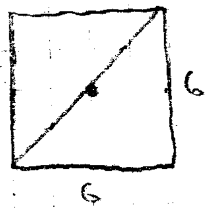
$$\boxed{y = -2x - 2,5}$$

4_



<u>Inscrit</u> :
centre : (1,0)
Rayon : 3
Equation : $(x-1)^2 + y^2 = 9$

<u>Circonscrit</u> :
centre : (1,0)
Rayon : $3\sqrt{2}$
Equation : $(x-1)^2 + y^2 = 18$



$\frac{\sqrt{6^2+6^2}}{2} = \frac{\sqrt{72}}{2} = \frac{\sqrt{2 \cdot 36}}{2} = \frac{6\sqrt{2}}{2} = 3\sqrt{2}$

#5 a) $a = 3 \quad b = 1 \Rightarrow \dfrac{(x+2)^2}{9} + (y-1)^2 = 1$

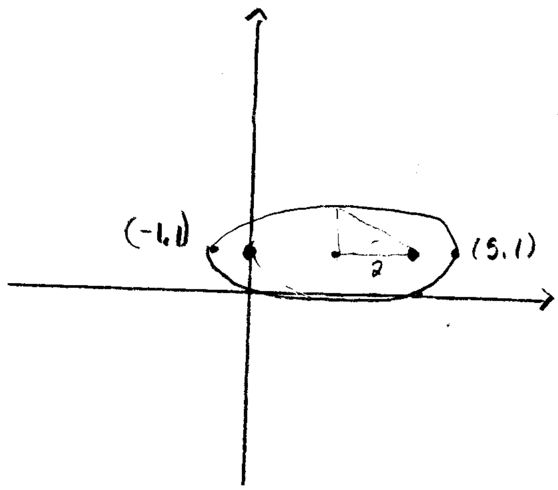
$h = -2 \quad K = 1$

b) $y^2 = -4(x+2)$

c) $b = 2 \Rightarrow$ pente : $\dfrac{b}{a} \Rightarrow 2 = \dfrac{2}{a} \Rightarrow a = 1$

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

#6 a)



$2a = 6 \Rightarrow a = 3$

$c = 2$

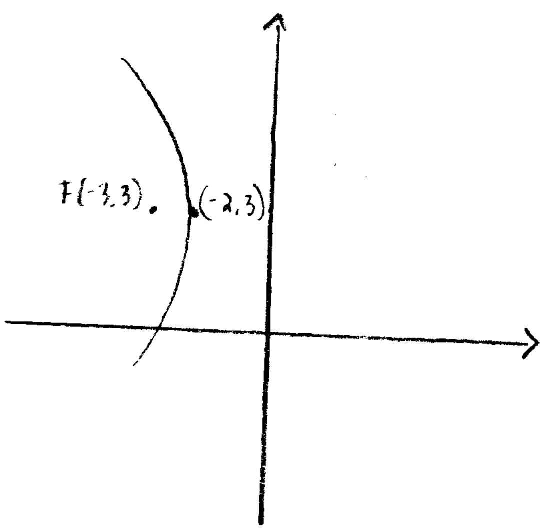
$b = \sqrt{3^2 - 2^2} = \sqrt{5}$

$h = 2$

$K = 1$

Equation: $\dfrac{(x-2)^2}{9} + \dfrac{(y+1)^2}{5} < 1$

b)



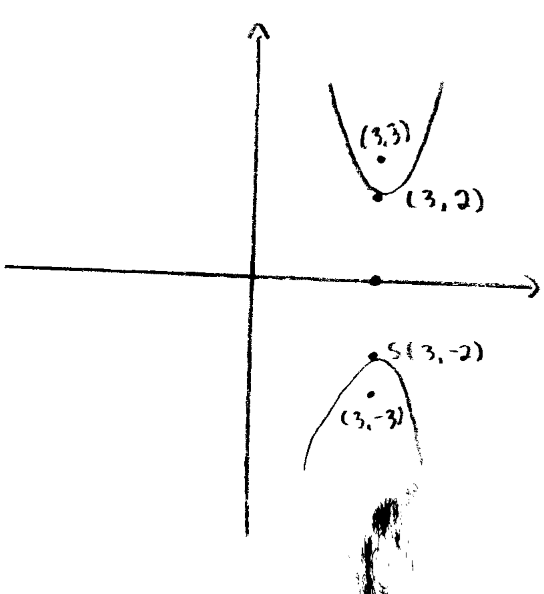
$h = -2$

$K = 3$

$c = 1$

$(y-3)^2 < -4(x+2)$

c)



$\left.\begin{array}{l} b = 2 \\ c = 3 \end{array}\right\} a = \sqrt{3^2 - 2^2} = \sqrt{5}$

$$\frac{(x-3)^2}{5} - \frac{y^2}{4} > -1$$

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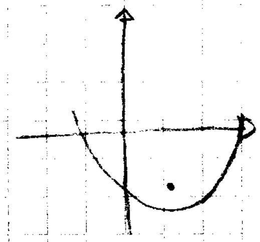
no: 7 $(x-2)^2 = 4(y+5)$

$S(2,-5)$ $F=(2,-4)$



$c = 1$

no: 9 $\dfrac{(x-2)^2}{64} - \dfrac{(y+1)^2}{36} = 1$

$a = 8$ et $b = 6$ $\Rightarrow c = \sqrt{64+36} = \sqrt{100} = 10$

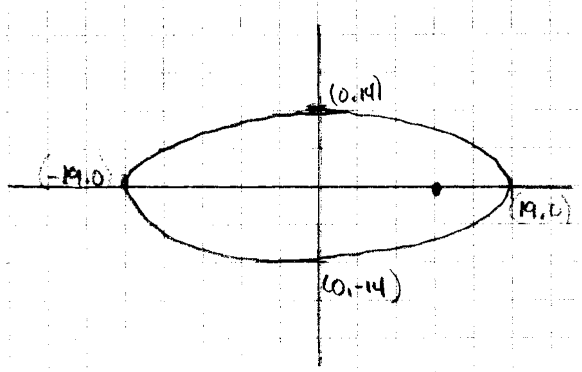
Centre : $(2,-1)$ $\Rightarrow$ $\boxed{F_1 : (-8,1) \text{ et } F_2 : (12,-1)}$

$\boxed{(y+1) = \pm \frac{3}{4}(x-2) \rightarrow \text{Asymptotes}}$

no: 11 a) $x^2+y^2 = 6370^2$

b) $x^2+y^2 = 392\,510^2$

#12



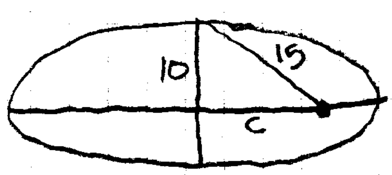
$\dfrac{x^2}{361} + \dfrac{y^2}{196} = 1$

#13 $100x^2 + 225y^2 = 22500$

$\rightarrow$ forme équation : $\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2} = 1$ doit être égale à 1

$\dfrac{100x^2}{22500} + \dfrac{225y^2}{22500} = \dfrac{22500}{22500}$ $\Big\}$ $\dfrac{x^2}{225} + \dfrac{y^2}{100} = 1$

On cherche la distance entre les foyers



$c = \sqrt{15^2 - 10^2} = 11.18$

distance : $2 \cdot 11.18 = 22.36$