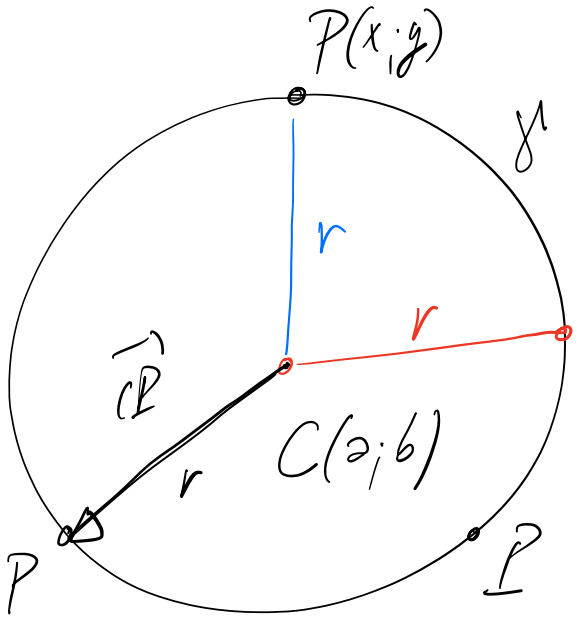
Cercle ?

degré 2

$$(x-a)^2+(y-b)^2=r^2$$



$\|\overrightarrow{CP}\| = r$

$\left\|\begin{pmatrix} x-a \\ y-b \end{pmatrix}\right\| = r$

$\sqrt{(x-a)^2+(y-b)^2} = r$

$()^2$

$(x-a)^2+(y-b)^2=r^2$

$\sqrt{16} = 4$

$16 = 4^2$

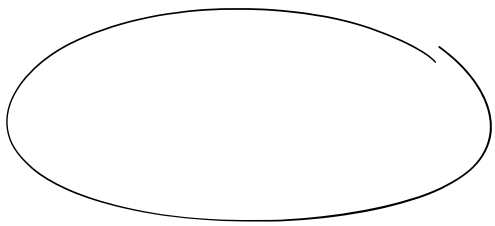
$\sqrt{A} = B$

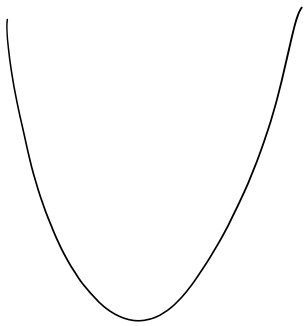
$(\sqrt{A})^2 = B^2$ $()^2$

$A = B^2$

Rappel : $ax+by+c=0$ est l'éq. 1er degré d'une droite.

Equations du 2ème degré





$ax^2+bx+c=y$

3.3.1

$(x-a)^2+(y-b)^2=r^2$

$x^2+4x+y^2-2y+5=0$ ← Cercle ?

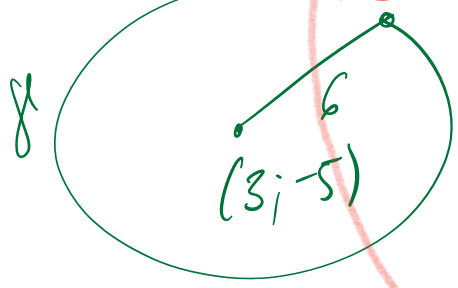
$x^2-2ax+a^2+y^2-2by+b^2=r^2$

x^2-2ax $+y^2-2by$ $+a^2+b^2-r^2=0$

nombre

Exemple: $(x-3)^2+(y+5)^2=36$ éq. de $\mathcal{C}$

$(x-a)^2+(y-b)^2=r^2$



$x^2-6x+9+y^2+10y+25=36$

$\boxed{x^2-6x+y^2+10y-2=0}$ aussi une éq. de $\mathcal{C}$

Forme canonique

$(A-B)^2=A^2-2AB+B^2$

$x^2+4x+y^2-2y+5=0$ Consigne

$=+4x$ $\quad$ $=0$

$x^2-2\cdot x\cdot(-2)+4-4=(x-2)^2-4=x^2+4x$

$A^2-2A\cdot B+B^2 \rightarrow (A-B)^2$

$4=2^2$ $\quad$ $-2=-2^2$

$(x+2)^2-4+y^2-2y+5=0$

$(x+2)^2+y^2-2y+1=0$

$C(2;?)$

$y^2 - 2y =$ $\qquad A^2 - 2AB + B^2$

$y^2 - 2 \cdot y \cdot 1 + \underbrace{1^2}_{0} - 1^2 = (y-1)^2 - 1$

$A^2 \quad A \quad B \quad B^2 \quad B^2$

$= y^2 - 2y + 1 - 1$

$(x+2)^2 + (y-1)^2 - 1 + 1 = 0$

$(x+2)^2 + (y-1)^2 = 0$ n'est pas un cercle

$C(-2;1) \quad r^2 = 0 \Rightarrow r = 0$

$x^2 + 4x + y^2 - 2y + 1 = 0$

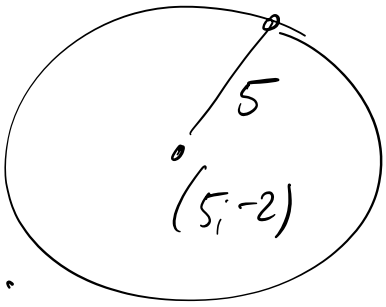
$(x+2)^2 + (y-1)^2 - 4 - 1 + 1 = 0$

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

$(x+2)^2 + (y-1)^2 = 4$ $\qquad C(-2;1) \quad r = 2$

3.3.1

$(x-a)^2+(y-b)^2=r^2$



a) $(x-5)^2+(y+2)^2=25$

Sagt- il de l'éq. d'un cercle ? Oui

$C(5;-2)$ $r^2=25 \Rightarrow r=5$

e) $x^2+y^2-2x+4y=20$

$x^2-2x + y^2+4y = 20$

$A^2-2AB+B^2-B^2$ $\qquad$ $A^2+2AB+B^2-B^2$

$x^2-2x\cdot 1+1^2-1^2$ $\qquad$ $y^2+2\cdot y\cdot 2+2^2-2^2$

$(x-1)^2-1$ $\qquad$ $(y+2)^2-4$

$(x-1)^2-1+(y+2)^2-4=20$ c'est un cercle

$(x-1)^2+(y+2)^2=25 \Rightarrow C(1;-2)$ $r=5$