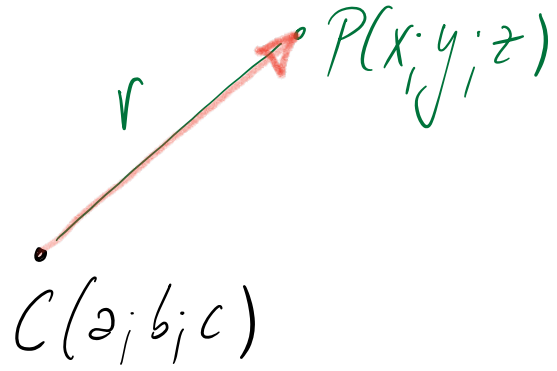
$r \in]0; +\infty[$

sphère

$\Sigma(C; r)$



$$u = \begin{pmatrix} x-a \\ y-b \\ z-c \end{pmatrix}$$

P est sur $\Sigma \iff \|u\| = r \iff \|u\|^2 = r^2$

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

Eq. du cercle dans $\mathbb{R}^3$: $\Sigma \cap \pi$

$$\Sigma : (x-a)^2 + (y-b)^2 + (z-c)^2$$

$$\pi : ex + fy + gz + h = 0$$

$a, b, c, e, f, g, h \in \mathbb{R}$

$$x^2+y^2+z^2-12x-2y+6z+56=0$$

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

$$x^2-12x \quad +y^2-2y \quad +z^2+6z \quad = -56$$

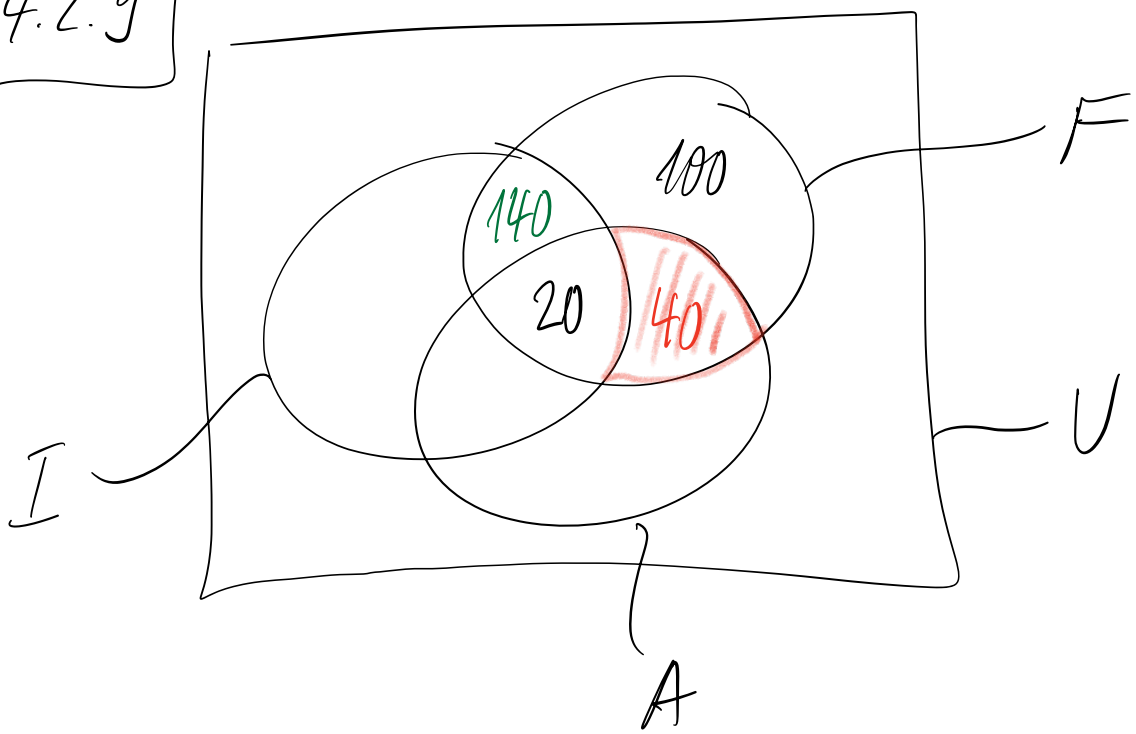
$x^2-2\cdot x\cdot 6+6^2-6^2$

$$(x-6)^2-6^2+(y-1)^2-1+(z+3)^2-9=-56$$

$$(x-6)^2+(y-1)^2+(z+3)^2=36+1+9-56=\underbrace{-10}_{r^2}$$

Ce n'est pas une sphère car r^2 est positif.

4.2.9



4.3.2 A : coeur $\quad p(A) = \frac{9}{36} = \frac{1}{4}$

B : valet de cœur $\quad p(B) = \frac{1}{36}$

$$p(A \wedge B) = \frac{1}{36} = p(B \wedge A)$$

$$p(B|A) = \frac{p(B \wedge A)}{p(A)} = \frac{1/36}{9/36} = \frac{1}{9}$$