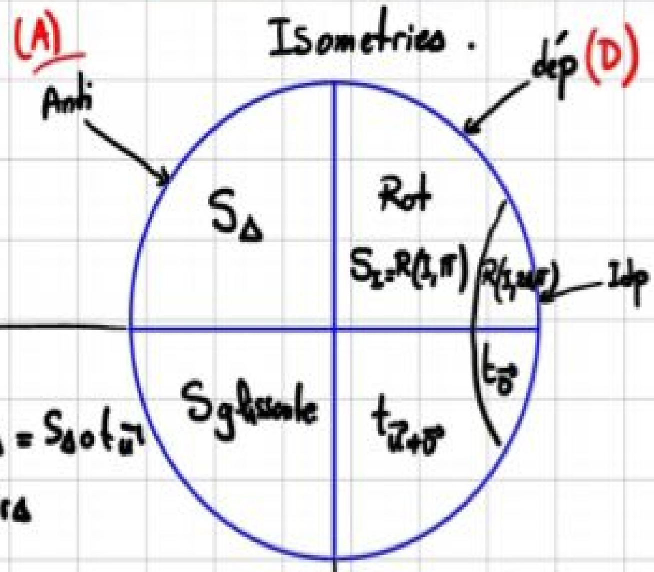
Isometries.



$t_{\vec{u}} \circ S_\Delta = S_\Delta \circ t_{\vec{u}}$

$\text{dir}\,\vec{u} = \text{dir}\,\Delta$

$\boxed{\text{Similitude}}$

$\circ\, h = S$

(I, k)

$\boxed{\text{homothetie}}$

$h(I,1) = Idp = t_{\vec{0}}$
$= R(I, 2k\pi)$

$A \circ h = S_-$ (similitude indirecte)

$D \circ h = S_+$ (Similitude directe)

$S_- \circ S_+ = S_-$

$S_- \circ S_- \circ S_- \circ S_- = S_+$

$\boxed{S_-}$

$(\boxed{I}^{\text{unique}}, \boxed{k^{\neq 1}_{>0}}, \boxed{\Delta})$

$\boxed{h(I,k) \circ S_\Delta = S_\Delta \circ h(I,k)}$

$\boxed{S_+}$

$(I^{\text{unique}}; k^{\neq 1}_{>0}; \theta)$

$h(\boxed{I}, k) \circ R(\boxed{I}, \theta) = R(\boxed{I}, \theta) \circ h(\boxed{I}, k)$

Ie...

$$h(I, k^{>0}) = S_+(I, k, 0)$$

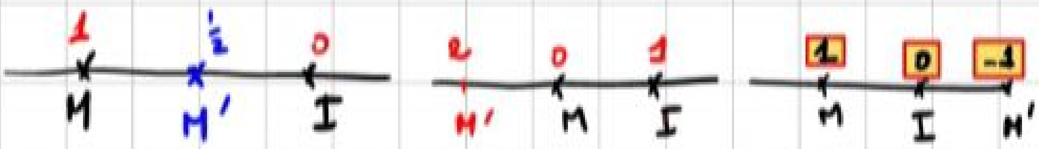
$$h(I, k^{<0}) = S_+(I, |k| ; \pi)$$

$$h(I,k)(M) = M' \Longleftrightarrow \boxed{\overrightarrow{IM'} = k\,\overrightarrow{IM}}$$

$$\Longleftrightarrow \overrightarrow{IM'} - k\,\overrightarrow{IM} = \vec{0}$$

$$\Longleftrightarrow I \text{ bary } \{(M',1); (M,-k)\}$$

$\boxed{k = \frac{1}{2}}$ $\boxed{k = 2}$ $\boxed{k = -1.}$



$$S_+ : z' = az + b \quad \text{avec } a \in \mathbb{C}^* \text{ et } b \in \mathbb{C}$$

$$S_+(I, k, \theta)$$

$$\left.\begin{array}{l} k = |a| \\ \theta \equiv \arg a \; [2\pi] \end{array}\right\} \boxed{a = k e^{i\theta}.}$$

$$z_I = a z_I + b.$$

$\boxed{a \neq 1.}$

$$\Leftrightarrow z_I(1-a) = b \Leftrightarrow \boxed{z_I = \frac{b}{1-a}.}$$

$S_+ : z' = (\sqrt{3}+i)z - i.$

$z' = az + b$ avec $(a = \sqrt{3}+i) \in \mathbb{C}^*$
et $b = -i \in \mathbb{C}$

Donc cette écriture est une écriture complexe de S_+

Déterminer le centre I, le rapport k.
et un angle θ de S_+

$$k = |a| = |\sqrt{3}+i| = \sqrt{3+1} = \sqrt{4} = \boxed{2}$$

$$\boxed{|Re + Im\, i| = \sqrt{R^2 + Im^2}}$$

θ un arg de a.

$$\begin{cases} \cos\theta = \frac{\sqrt{3}}{2} \\ \sin\theta = \frac{1}{2} \end{cases} \quad \boxed{\theta = \frac{\pi}{6}}$$

$$z_I = \frac{b}{1-a} = \frac{-i}{1-(\sqrt{3}+i)}$$

$$= \boxed{\frac{5+2\sqrt{3}}{13} + \frac{1+3\sqrt{3}}{13}i}$$

$$S_+\left(I(2,1)\,;\,3\,;\,\frac{\pi}{3}\right).$$

$$a = 3e^{i\frac{\pi}{3}} = 3\left(\cos\frac{\pi}{3} + i\sin\frac{\pi}{3}\right)$$

$$= \frac{3}{2} + \frac{3\sqrt{3}}{2}i$$

$$b = z_I(1-a).$$

$$= (2+i)\left(1-\frac{3}{2}-\frac{3\sqrt{3}}{2}i\right)$$

$$z' = az + b \quad \text{avec}$$

$$S_+(A) = B \qquad S_+(C) = D.$$

$$S_+ : P \longrightarrow P.$$
$$M(z) \longmapsto M'(z') \ \text{tel que} \ z' = az + b$$

$$\begin{cases} z_B = a z_A + b. \\ z_D = a z_C + b. \end{cases}$$

S_- : $z' = a\bar{z} + b$ avec $a \in \mathbb{C}^*$, $b \in \mathbb{C}$.

$\boxed{k = |a|}$

$\boxed{z\bar{z} = |z|^2}$

$z_I = a\overline{z_I} + b.$

$\Leftrightarrow z_I = a\overline{\left(a\overline{z_I} + b\right)} + b.$

z_I

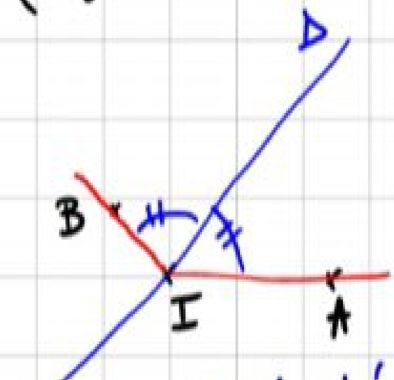
$= a\left(\bar{a} z_I + \bar{b}\right) + b.$

$z_I = |a|^2 z_I + a\bar{b} + b.$

$z_I\left(1 - |a|^2\right) = a\bar{b} + b.$

$$\boxed{z_I = \frac{a\bar{b} + b}{1 - |a|^2}}$$

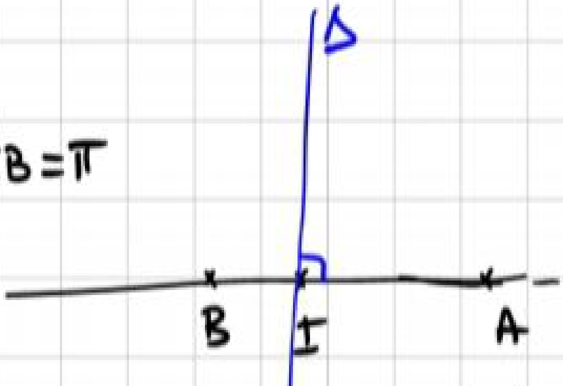
$S_I(I) = I \qquad S_{\_}(A) = B.$



$0 < \widehat{AIB} < \pi$.

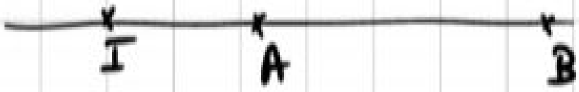
Δ est l'axe de S_I.

$\widehat{AIB} = \pi$



Δ est la droite ⊥ (AB) passant par I.

$\boxed{\widehat{AIB} = 0}$



$\Delta = (AB)$