Nombres Complexes

Aubin SIONVILLE

MPI Clemenceau - 2021-2023

Formules de trigonométrie

Hypothèse : $(a, b) \in \mathbb{R}^2$

$$\boxed{\cos(a+b) = \cos(a)\cos(b) - \sin(a)\sin(b)}$$

$$\boxed{\sin(a+b) = \sin(a)\cos(b) + \cos(a)\sin(b)}$$

Hypothèse : $a + b \not\equiv \dfrac{\pi}{2}[\pi]$:

$$\boxed{\tan(a+b) = \frac{\tan(a) + \tan(b)}{1 - \tan(a)\tan(b)}}$$

Hypothèse : $a \not\equiv \dfrac{\pi}{2}[\pi]$:

$$\boxed{1 + \tan^2(a) = \frac{1}{\cos^2(a)}}$$

Transformations géométriques

Translation : $\boxed{M' = t_{\overrightarrow{\omega}}(M) \iff z_{M'} = z_M + z_{\overrightarrow{\omega}}}$

Rotation : $\boxed{M' = \rho_{\Omega,\theta}(M) \iff z_{M'} = \omega + \mathrm{e}^{i\theta}(z_M - \omega)}$

Homothétie : $\boxed{M' = h_{\Omega,\lambda}(M) \iff z_{M'} = \omega + \lambda(z_M - \omega)}$

Similitude : $\boxed{M' = S_{\Omega,\lambda,\theta}(M) \iff z_{M'} = \omega + \lambda(\mathrm{e}^{i\theta}(z_M - \omega))}$

$S_{\Omega,\theta,\lambda} = \rho_{\Omega,\theta} \circ h_{\Omega,\lambda}$

Formules d'Euler

$$\boxed{\cos(x) = \frac{\mathrm{e}^{ix} + \mathrm{e}^{-ix}}{2}}$$

$$\boxed{\sin(x) = \frac{\mathrm{e}^{ix} - \mathrm{e}^{-ix}}{2i}}$$