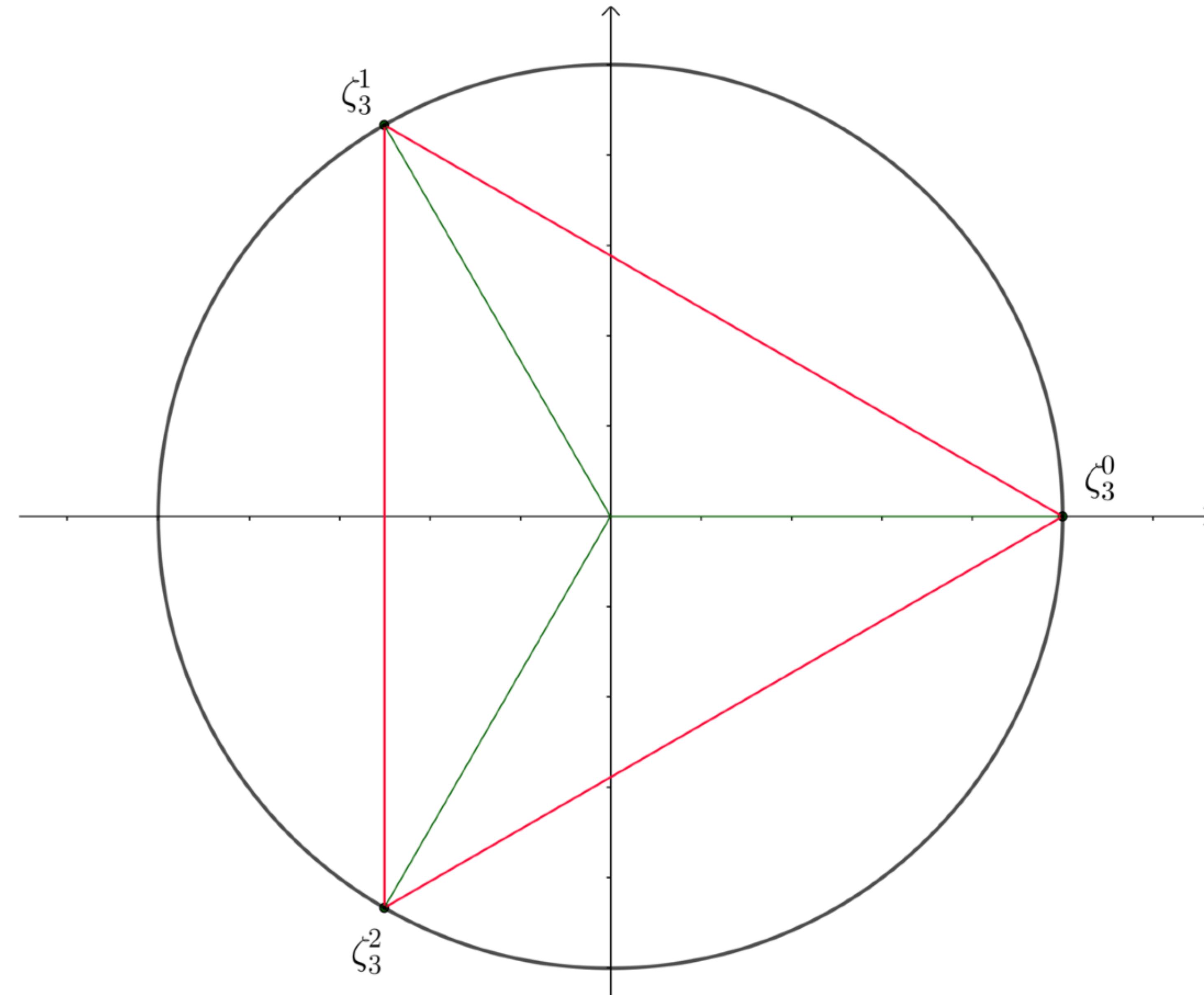


Racines de l'unité

$$\sqrt[3]{1} = \{\zeta_3^0, \zeta_3^1, \zeta_3^2\}$$

$$\zeta_n^k = e^{\frac{2i\pi k}{n}}$$

$$\zeta_3^1 = e^{\frac{2i\pi}{3}}$$



Racines de l'unité

$$\sqrt[4]{1} = \{\zeta_4^k \mid k \in \mathbb{Z}_4\} = \{\pm 1, \pm i\}$$

$$\zeta_n^k = e^{\frac{2i\pi k}{n}}$$

$$\zeta_4^1 = e^{\frac{2i\pi}{4}}$$

$$= e^{\frac{i\pi}{2}}$$

$$= \sqrt{e^{i\pi}}$$

$$= \sqrt{-1}$$

$$= i$$

