Trigonometric form of roots of the equation: $x^{263} - 4\sqrt{3}\imath - 4 = 0$

$x^{263} - 4\sqrt{3}\imath - 4 = 0$

$x^{263} = 4 + 4\sqrt{3}\imath = z$

$x = \sqrt[263]{z}$

$|z| = \sqrt{Re(z)^2 + Im(z)^2}$

$\cos\varphi = \frac{Re(z)}{|z|}, \sin\varphi = \frac{Im(z)}{|z|}$

$z = |z|\left(\cos\varphi + \imath\sin\varphi\right)$

$\sqrt[n]{z} = |z|^{\frac{1}{n}}\left(\cos\frac{\varphi+2k\pi}{n} + \imath\sin\frac{\varphi+2k\pi}{n}\right)$

$k = 0, 1, \ldots, n-1$

$|z| = \sqrt{(4)^2 + \left(4\sqrt{3}\right)^2} = \sqrt{16 + 16\times 3} = \sqrt{4\times 16} = 2\times 4 = 8$

$z = 8\left(\frac{4}{8} + \frac{4\sqrt{3}}{8}\right) = 8\left(\frac{1}{2} + \imath\frac{\sqrt{3}}{2}\right) = 8\left(\cos\frac{\pi}{3} + \imath\sin\frac{\pi}{3}\right)$

$x = \sqrt[263]{z} = 2^{\frac{3}{263}}\left(\cos\frac{\frac{\pi}{3}+2k\pi}{263} + \imath\sin\frac{\frac{\pi}{3}+2k\pi}{263}\right)$

$k = 0, 1, \ldots, 262$