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

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

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

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

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

$$z = |z| \left(\frac{Re(z)}{|z|} + \frac{Im(z)}{|z|}\imath \right) = |z| \left(\cos\varphi + \imath \sin\varphi \right)$$

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

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

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

$$x = \sqrt[263]{4 + 4\sqrt{3}\imath}$$