Review: Complex numbers NO CALCULATORS

[1] Find the modulus (absolute value) of each number.

[a] $3-4i$ [b] $-10i$

[2] Find the argument (angle) of each number.

[a] $-i$ [b] $-1-i$

[3] Rewrite each number in modulus-argument form ($r\,\text{cis}\,\theta$)

[a] 4 [b] -4 [c] $5i$ [d] $-4i$ [e] $-3+3i$ [f] $1-\sqrt{3}i$

[4] Rewrite each number in Cartesian form ($a+bi$)

[a] $\text{cis}\,45°$ [b] $\text{cis}\,\frac{5\pi}{6}$ [c] $4\text{cis}120°$ [d] $2\text{cis}\,\frac{3\pi}{4}$

[5] Evaluate and give your answer in Cartesi an form: $\left(\text{cis}\,\frac{2\pi}{3}\right)^5$

[6] Evaluate and give your answer in Cartesian form: $\left(-\frac{1}{\sqrt{2}}+\frac{1}{\sqrt{2}}i\right)^4$

[7] Evaluate and give your answer in Cartesian form: $\left(\frac{1}{2}+\frac{\sqrt{3}}{2}i\right)^6$

[8] One of the cube roots of complex number z is $4\,\text{cis}\,\frac{\pi}{3}$. Find the other two cub roots of z.

[9] Evaluate and give your answer in polar form: $\left(3\,\text{cis}\,\frac{\pi}{3}\right)\left(4\,\text{cis}\,\frac{5\pi}{4}\right)$

[10] Evaluate and give your answer in polar form: $\dfrac{9\,\text{cis}\,\frac{3\pi}{4}}{3\,\text{cis}\,\frac{\pi}{3}}$

[11] Find the three cube roots of $-\frac{1}{\sqrt{2}}+\frac{1}{\sqrt{2}}i$. Give your answers in Cartesian form.