

H.W. (2)

Q1. Write the following function $f(z)$ in the forms $f(z) = u(x, y) + i v(x, y)$

a- $f(z) = \frac{1}{i-z}$ b- $f(z) = \frac{z-i}{4+z}$

Q2- Write the function $f(z)$ in both Cartesian coordinate form and polar coordinate form.

a- $f(z) = z + \frac{1}{z} \quad z \neq 0$

b- $f(z) = z^5 + 4z^2 - 6$

Q3- Determine all values of:

a- 3^π

b- $(-i)^{-i}$

c- $\exp\left(\frac{2+\pi i}{4}\right)$

d- $\ln((1+i)^{i\pi})$

Q4- Evaluate the following in the complex plane and then evaluate the absolute value

a- $(\cosh(i\pi))^{2i}$

b- $\cos(3+i)$

c- $\sin\left(\frac{\pi}{2}i\right)$

d- $\cosh(\pi + \pi i)$

e- $\sin(4 + 3i)$