
Assignment 4

MA06 Complex Analysis

Deadline 11:59 AM, 20181218

1. (a) Verify that the given function $u(x, y) = x^2 - y^2$ is harmonic in an appropriate domain D .
(b) Find $v(x, y)$, which is the harmonic conjugate of $u(x, y)$ in (a). Form the corresponding analytic function $f(z) = u + iv$.
2. Find the derivative f' of the given function $f(z) = z^2 e^{z+i}$.
3. Write the given expression in terms of x and y .
 - (a) $|e^{z^2-z}|$
 - (b) $\arg(e^{z-\frac{i}{z}})$
4. Find all complex values of the given logarithm $\ln(1+i)$.
5. Write the principal value of the logarithm $\text{Ln}(6-6i)$ in the form $a+ib$.
6. Find a domain in which the given function $f(z) = 3z^2 - e^{2iz} + i\text{Ln}z$ is differentiable; then find the derivative f' .

Notice: Please write Your Name and Student ID when you submit.