

Homework II(part 1)

➤ **Section 13.4**

Are the following functions harmonic? If yes, find a corresponding analytic function $f(z) = u(x, y) + v(x, y) * i$

17) $u = x^3 - 3xy^2$

21) $u = e^{-x} \sin(2y)$

Determine A such that the given functions are harmonic and find a harmonic conjugate.

22) $u = e^{3x} \sin(Ay)$

➤ **Section 13.5**

Compute e^z in the form $u + iv$ and $|e^z|$, where z equals:

2) $3 + i\pi$

7) $0.8 - 5i$

Write in polar form:

17) -9

Find all solutions and graph some of them in the complex plane.

18) $e^{3z} = 4$

➤ **Section 13.6**

Compute (in the form $u + iv$)

8) $\sin(1+i)$

14) $\sinh(4-3i)$

Find all solutions of the following equation.

17) $\cosh z = 0$

➤ **Section 13.7**

Find $\text{Ln } z$ when z equals :

4) $-5 \pm 0.1i$

Find all values and graph some of them in the complex plane.

11) $\ln(-1)$

Show the details of your work, find the principal value of:

24) $(1-i)^{(1+i)}$