Complex Analysis

Math 312 — MWF 10:30-11:25am

Spring 1996 — 201 Fowler

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Worksheet #11

SUMMARY Review

- addition, multiplication, subtraction, division of complex numbers
- modulus, conjugate
- argument and principal argument of a number ($-\pi < \text{Arg } z \leq \pi$)
- triangle inequality
- polar and exponential forms of a complex number
- graphical interpretations of complex numbers and operations
- De Moivre's Formula, Euler's Formula
- n-th roots of unity, primitive root
- n-th roots of complex numbers
- point sets
- functions of complex numbers (2 real function $u(x, y)$ and $v(x, y)$
- functions as mappings from z-plane to w-plane
- limits
- continuity and derivatives

SAMPLE QUESTIONS

1. If z_1 = 1+i, z_2 = 2-i, z_3 = -2i compute $z_1 z_2 z_3$, $z_1 + z_2 + z_3$ and write your answers in exponential form. Draw the numbers in the complex plane
2. If $f(z) = (1 + i)z$ write down the component functions u and v
3. Draw the picture which represents what z_1, z_2 and z_3 look like in the w-plane
4. Solve $5z^2 + 2z + 10 = 0$
5. Sketch the set of points such that $0 < |z - 3|$