

Copying answers and steps is strictly forbidden. Same instructions as Mission 1. Do not fold. Thanks!

Problem 31 Your signature below indicates you have:

(a.) I have read Chapter 3 of Gamelin: _____.

(b.) I have read Cook's Guide to Chapter 3: _____.

Problem 32 Gamelin III.1 #2

Problem 33 Gamelin III.1 #6

Problem 34 Gamelin III.2 # 1 a, b

Problem 35 Gamelin III.3 # 1 a, d

Problem 36 Use the maximum principle to prove the Fundamental Theorem of Algebra.
it would be wise to ask me to direct you to a technical lemma found in Churchill's Complex Variable text

Problem 37 Suppose $f = u + iv$ is holomorphic. Calculate $f'(z)dz$ where $dz = dx + idy$ and we define the multiplication of complex functions and forms in the natural manner;

$$(a + ib)(cdx + iedy) = acdx - bedy + i(dcdx + aedy).$$

Relate $f'(z)dz$ to du and dv and comment on why $\frac{df}{dz} = f'(z)$ is such a snazzy notation. Notice Definition 3.2.1 in my notes gives a careful definition of df .

Problem 38 Problem 5 of §4.2 on page 281 of Fisher's *Complex Variables* (fluid flow)

Problem 39 Problem 16 of §4.2 on page 283 of Fisher's *Complex Variables* (fluid flow)

Problem 40 Problem 17 of §4.2 on page 283 of Fisher's *Complex Variables* (fluid flow)