

# EE 303 : Signal Analysis and Transformation Methods

## Assignment 1

Date Assigned: 09/12/2005  
Due on: 09/23/2005 before the recitation

### Problem 1.

Given a complex quantity  $w=x-jy$ , show that

i)  $Re(e^w) = e^x \cos(y)$

ii)  $Im(e^w) = -e^x \sin(y)$

$Re(.)$  and  $Im(.)$  denote the real and imaginary parts, respectively.

### Problem 2.

Problem # B.4, page 64 of the textbook.

### Problem 3.

Problem # B.7, page 65 of the textbook.

### Problem 4.

Show that  $\sinh(w) = \cos(y) \sinh(x) + j \sin(y) \cosh(x)$

### Problem 5.

Problem # B.35 a) and B.35 c), page 67 of the textbook.

### Problem 6.

Problem # B.39 parts a), b) and c), page 67 of the textbook.

### Note :

#1. Problem 5 involves partial fraction expansion which will be covered in the recitation this week.

#2. Problem 6 requires the use of basic Matlab commands. Hints for this problem will be given in the recitation. You have to submit a printout of the plot generated.

#3. Up to 3 students can submit the homework together. Only **one** copy of submission per group is required.