Problem 1.

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

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

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

$\text{Re}(.)$ and $\text{Im}(.)$ 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.