

You are to answer as many questions as you can during the tutorial session. You are welcome to work in small groups of no more than four. Only one final copy of the problem set is to be submitted to your TA. Please make sure all group members' names and student numbers are clearly written on the final copy. Textbooks and class notes are allowed. Grades will be as follows: 0 - unsatisfactory or absent, 1 - reasonable attempt, 2 - good attempt.

1. Evaluate the expression and write your answer in the form $a + bi$.

a. $(5 - 6i) + (3 + 2i)$

b. $(2 + 5i)(4 - i)$

c. $\frac{1 + 4i}{3 + 2i}$

2. Find polar forms for zw , $\frac{z}{w}$, and $\frac{1}{z}$ by first putting z and w into polar form.

$$z = \sqrt{3} + i \quad w = 1 + \sqrt{3}i$$

3. Find the indicated power using De Moivre's Theorem.

$$(1 - i)^8$$

4. Determine if the linear system is consistent. Do not completely solve the system.

$$\begin{aligned} x_1 + 3x_3 &= 2 \\ x_2 - 3x_4 &= 3 \\ -2x_2 + 3x_3 + 2x_4 &= 1 \\ 3x_1 + 7x_4 &= -5 \end{aligned}$$

5. Determine the value(s) of h such that the matrix is the augmented matrix of a consistent linear system.

$$\begin{bmatrix} 1 & h & 4 \\ 3 & 6 & 8 \end{bmatrix}$$

