Linear Algebra 2
Assignment # 2

Textbook Problems:

1C: 3,4,5,10

Additional Problems:

1. Let $z = 3 + 2i \in \mathbb{C}$. Find the following:

   (a) $\overline{z}$.

   (b) $|z|$.

   (c) z^{-1}.

2. Simplify the following expression into the form $a + bi$, where $a, b \in \mathbb{R}$. Keep your coefficients as simplified fractions:

$$\frac{2 + \frac{1}{2}i}{1 - \frac{3}{4}i}$$

3. **Linear Combinations in $\mathbb{C}^2$**

   Compute the vector $\mathbf{w} = c_1\mathbf{v_1} + c_2\mathbf{v_2}$ given:

$$c_1 = 1 - 2i, \quad \mathbf{v_1} = \begin{bmatrix} 1 + i \\ 2 - i \end{bmatrix}$$

$$c_2 = 2 + i, \quad \mathbf{v_2} = \begin{bmatrix} 3 \\ 1 + 2i \end{bmatrix}$$

   Make sure to write all complex numbers in the form $a + bi$ for $a, b \in \mathbb{R}$.