

Math 240
Linear Algebra
Homework 1

1. Find the coefficients a, b , and c so that the graph of the polynomial $f(x) = ax^2 + bx + c$ passes through the points $(1, 2)$, $(-1, 6)$, and $(2, 3)$.
2. Find the coefficients a, b, c , and d so that the graph of the polynomial $f(x) = ax^3 + bx^2 + cx + d$ passes through the points $(-3, -2)$, $(-1, 2)$, $(1, 5)$ and $(2, 1)$.
3. Find all solutions to the system

$$\begin{cases} (1 - i)x_1 - ix_2 = 0 \\ 2x_1 + (1 - i)x_2 = 0 \end{cases}$$

where $i \in \mathbb{C}$.

4. The system

$$\begin{cases} 2 \sin \alpha - \cos \beta + 3 \tan \gamma = 3 \\ 4 \sin \alpha + 2 \cos \beta - 2 \tan \gamma = 10 \\ 6 \sin \alpha - 3 \cos \beta + \tan \gamma = 9 \end{cases}$$

is not linear, however, we can still use elimination if we are clever in regards to the trig functions. Does this system have a solution?