

Clase a XII - a C / $(-i)^2 = +i^2 = -1$

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E5) b) $f = cx^2 + bx + a$: $f(i) = f(-i) + 1 = 0$
 $\Rightarrow \begin{cases} f(1) = 0 \Rightarrow c + b + a = 0 \Rightarrow a + b + c = 0 \\ f(i) = 0 \Rightarrow c \cdot i^2 + b \cdot i + a = 0 \Rightarrow a + bi - c = 0 \Rightarrow (a - c) + bi = 0 \\ f(i) + 1 = 0 \Rightarrow f(-i) = -1 \Rightarrow c - bi + a = 0 \Rightarrow (a - c) - bi = -1 \end{cases}$

$$\begin{cases} a + c + b = 0 \\ (a - c) + bi = 0 \\ (a - c) - bi = -1 \end{cases} \quad A = \begin{pmatrix} 1 & 1 & 1 \\ 0 & -1 & i \\ 1 & -1 & -i \end{pmatrix}; \overline{A} = \left(\begin{array}{ccc|c} 1 & 1 & 1 & 0 \\ 0 & -1 & i & 0 \\ 1 & -1 & -i & -1 \end{array} \right)$$

$$\Delta = \begin{vmatrix} 1 & 1 & 1 \\ 1 & -1 & i \\ 1 & -1 & -i \end{vmatrix} = i - 1 + i + i + i = 4i$$

$d = 4i \neq 0 \Rightarrow$ sistem compatibil determinat

$$d_a = \begin{vmatrix} 0 & 1 & 1 \\ 0 & -1 & i \\ -1 & -1 & -i \end{vmatrix} = 0 + 0 - i - 1 - 0 - 0 \Rightarrow \underline{d_a = -1 - i}$$

$$d_c = \begin{vmatrix} 1 & 0 & 1 \\ 1 & 0 & i \\ 1 & -1 & -i \end{vmatrix} = 0 - 1 + 0 - 0 + i + 0 \Rightarrow \underline{d_c = -1 + i}$$

$$d_b = \begin{vmatrix} 1 & 1 & 0 \\ 1 & -1 & 0 \\ 1 & -1 & -1 \end{vmatrix} = 1 - 0 + 0 + 0 + 1 + 0 = 2$$

$$a = \frac{d_a}{d} = \frac{-1-i}{4i} = \frac{-i-i^2}{4i^2} = \frac{-i+1}{4(-1)} = \underline{\underline{a = \frac{i-1}{4}}}$$

$$c = \frac{dc}{d} = \frac{-1+i}{4i} = \frac{-i+i^2}{4i^2} = \frac{-i-1}{-4} = \frac{i+1}{4} \Rightarrow$$

$$\Rightarrow |c| = \left| \frac{i+1}{4} \right|$$

$$b = \frac{db}{d} = \frac{2i^2}{4i} = \frac{1}{2i} = \frac{i}{2i^2} = \frac{i}{-2} \Rightarrow b = -\frac{i}{2}$$

$$\text{Solution: } \begin{cases} a = \frac{i+1}{4} \\ b = -\frac{i}{2} \\ c = \frac{i+1}{4} \end{cases}$$