Determine the length-8 sequence from its DFT, $X(k) = \{6, 2-j, -3, 2+j, 5, 4-3j, 4, 4+3j\}$

$$\text{IDFT: } x(n) = X_N = \frac{1}{N}[W_N^*]x_N$$

$$[W_8^*] = \begin{bmatrix} 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\ 0.707 - j0.707 & -j & -0.707 - j0.707 & -1 & -0.707 + j0.707 & j & 0.707 + j0.707 & 1 \\ -1 & -j & 1 & j & -1 & -j & 1 & j \\ -0.707 - j0.707 & -1 & 0.707 - j0.707 & j & 0.707 + j0.707 & 1 & -0.707 + j0.707 & -j \\ 1 & -1 & 1 & -1 & 1 & -1 & 1 & -1 \\ -0.707 + j0.707 & -1 & 0.707 + j0.707 & -j & 0.707 - j0.707 & 1 & -0.707 - j0.707 & j \\ -1 & j & 1 & -j & -1 & j & 1 & -j \\ 0.707 + j0.707 & -j & -0.707 + j0.707 & -1 & -0.707 - j0.707 & j & 0.707 - j0.707 & 1 \end{bmatrix}$$