Source task and conventions

Determine whether the six printed values can be the first six entries of a twelve-point DFT of a real sequence.

Conventional solution and proof

For any real sequence, $V[0] = \sum_n v[n]$ is real. The source gives $V[0] = 1 + i$, so no real sequence has the stated spectrum. There is also no supplied value for the self-paired bin $V[6]$; even after replacing $V[0]$ by a real number it would remain a free real parameter. Under that explicitly modified premise, conjugate symmetry would give

$$V[7] = 1,\ V[8] = 3 - i,\ V[9] = 2,\ V[10] = 7 + i,\ V[11] = 3, \qquad V[6] \in \mathbb{R}.$$

The contradiction at DC resolves the literal question; a unique numerical completion is impossible.

Structural or analytic derivation

The fixed-point condition $V[k] = V^*[(-k)_{12}]$ gives both the immediate inconsistency and the unpaired real degree of freedom. It is stronger than attempting an inverse transform and inspecting its imaginary part.

Comparative cost and preferred method

One reality check disproves feasibility. With consistent endpoints, completing five paired entries is $O(N)$ work. No invented sixth value or shifted indexing is used to manufacture a unique answer.

Source qualification

The twelve-point length and $1 + i$ first bin were checked on source page 101.