Source task and conventions

Give a $\Theta(n \log n)$ inverse DFT algorithm for power-of-two n.

Conventional solution and proof

Let `FFTplus` denote the source's positive-exponent radix-two transform. Then:

```
def inverse_dft(y):
    n = len(y)
    if n == 0: raise ValueError("nonempty transform")
    z = FFTplus([conjugate(v) for v in y])
    return [conjugate(v) / n for v in z]
```

Conjugating the transform changes ω_n^{jk} to ω_n^{-jk}, so the return value is $n^{-1} \sum_k y_k \omega_n^{-jk}$. Composing with the forward transform gives $n^{-1} \sum_l a_l \sum_k \omega_n^{(l-j)k}$. The inner sum is n when $l = j$ and zero otherwise: if $l \neq j$, multiply the finite geometric sum by $1 - \omega_n^{l-j} \neq 0$. Hence the composition is the identity.