
EXERCISE 7.7: In Chapter 6, we saw that the frequency response for a real impulse response must be conjugate symmetric. Show that a lowpass frequency response defined with linear phase

$$H(e^{j\hat{\omega}}) = e^{-j7\hat{\omega}} H_{\text{LP}}(e^{j\hat{\omega}})$$

is conjugate symmetric, which would imply that its inverse DTFT is real.

