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**EXERCISE 7.1:** Show that the DTFT function  $X(e^{j\hat{\omega}})$  defined in (7.2) is always periodic in  $\hat{\omega}$  with period  $2\pi$ , that is,

$$X(e^{j(\hat{\omega}+2\pi)}) = X(e^{j\hat{\omega}}).$$

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