Concept Question 5-13: What is the form for the Fourier transform $\mathbf{X}(\omega)$ of a rectangular pulse of amplitude 1 and duration τ?

$\mathbf{X}(\omega) = \tau \, \mathrm{sinc}(\omega\tau/2)$, from Eq. (5.88), is plotted in Fig. (5-13):

(a) $x(t)$

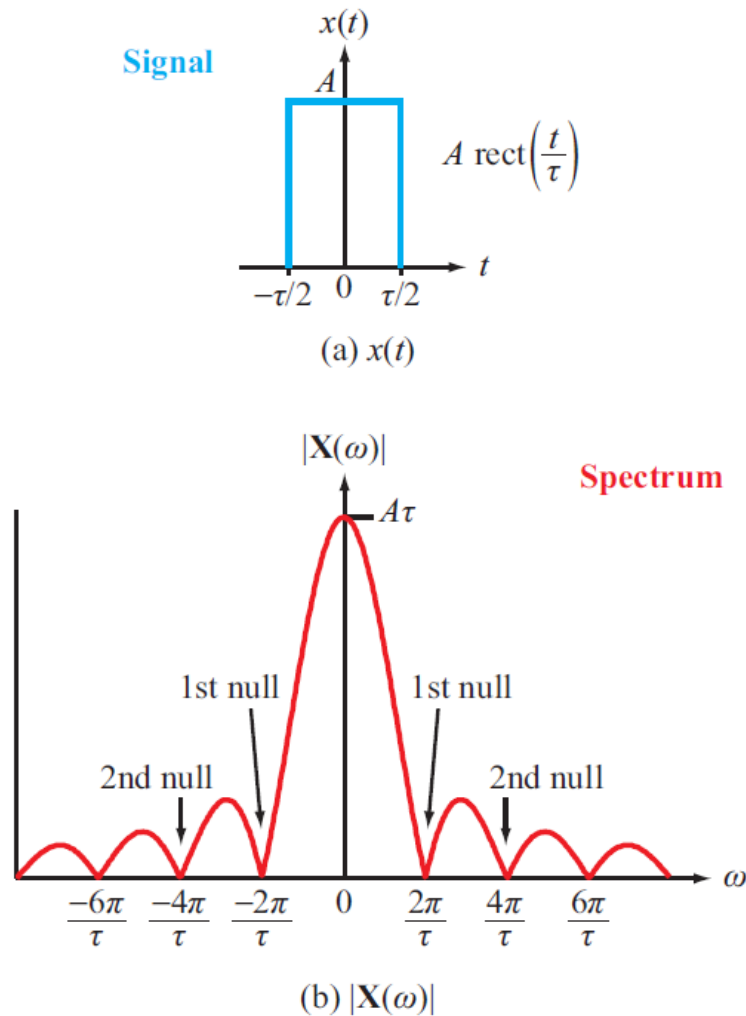
(b) $|\mathbf{X}(\omega)|$

Figure 5-13: (a) Rectangular pulse of amplitude A and width τ; (b) frequency spectrum of $|\mathbf{X}(\omega)|$ for $A = 5$ and $\tau = 1$ s.