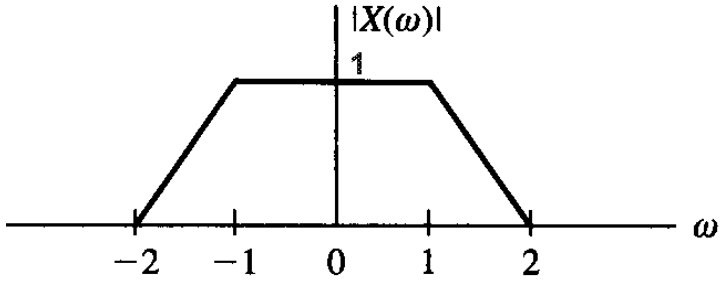
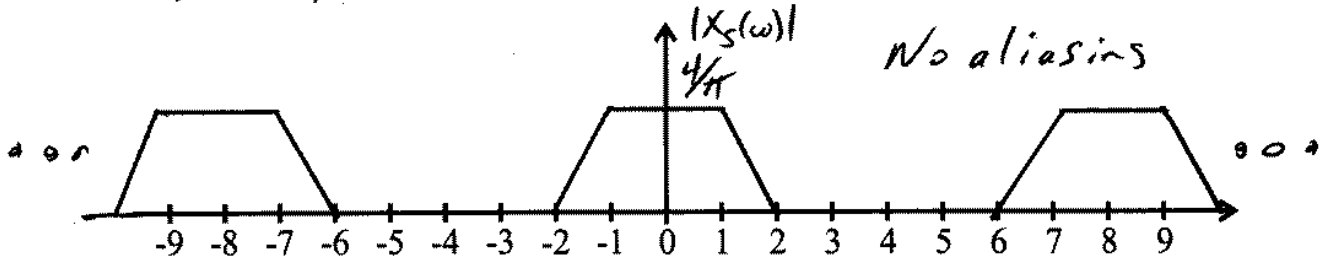
5.32 Consider the signal with the amplitude spectrum shown in Figure P5.32. Let $x_s(t) = x(t)p(t)$ represent the sampled signal. Draw $|X_s(\omega)|$ for the following cases:

(a) $T = \pi/4$ sec
(b) $T = \pi/2$ sec
(c) $T = 2\pi/3$ sec

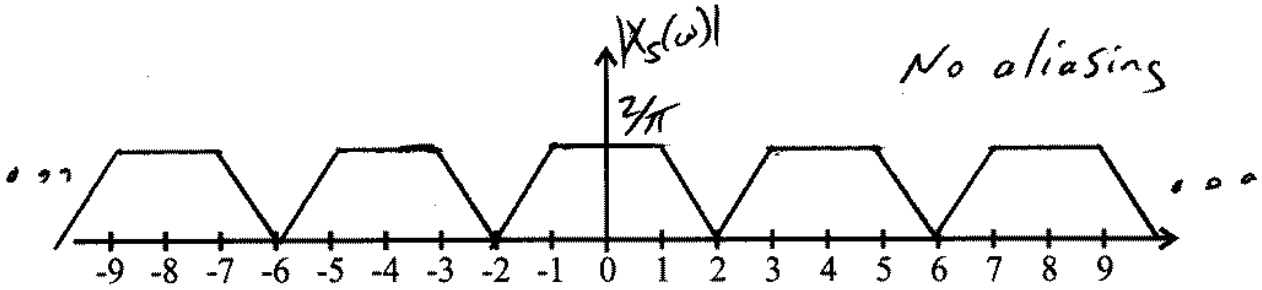


Use (5.51), $X_s(\omega) = \sum_{k=-\infty}^{\infty} \frac{1}{T} X(\omega - k\omega_s)$

a) $\omega_s = 2\pi/T = \frac{2\pi}{(\pi/4)} = 8$ rad/s and $1/T = \frac{1}{(\pi/4)} = 4/\pi$



b) $\omega_s = 2\pi/T = \frac{2\pi}{\pi/2} = 4$ rad/s and $1/T = 1/\pi/2 = 2/\pi$



c) $\omega_s = \frac{2\pi}{2\pi/3} = 3$ rad/s and $1/T = \frac{1}{2\pi/3} = 3/2\pi$