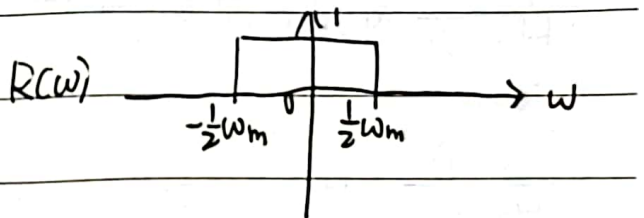
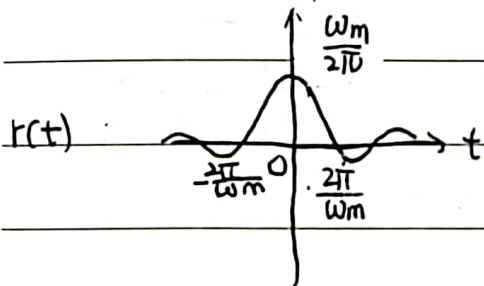
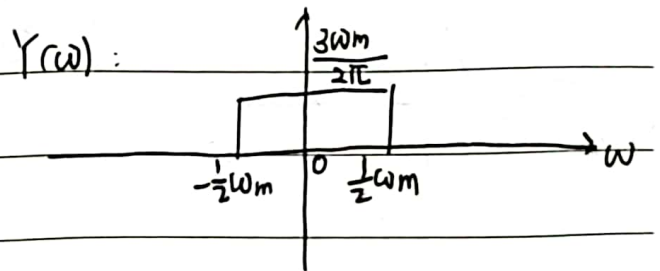
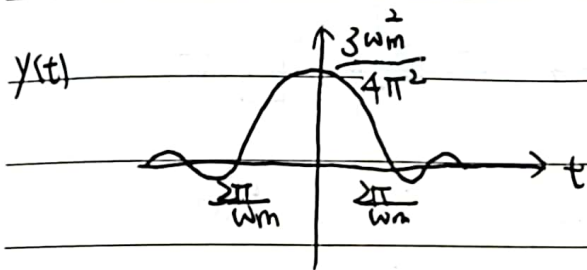
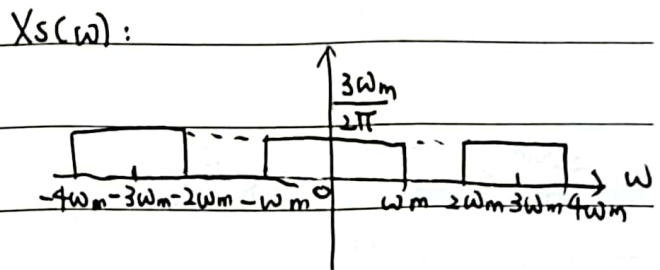
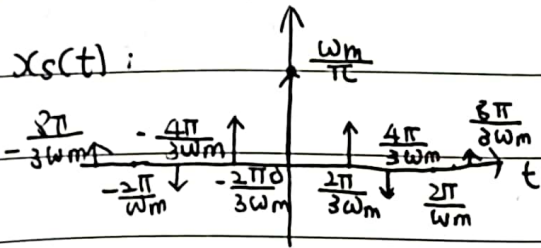
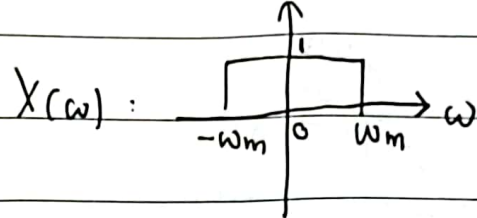
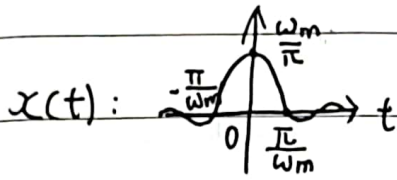


$3\omega_m$

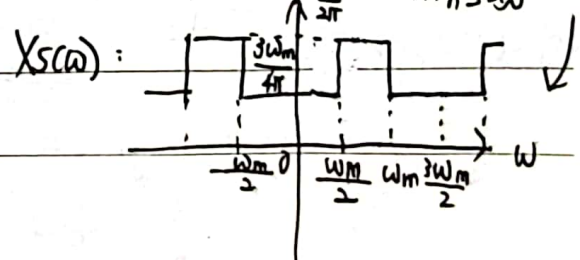
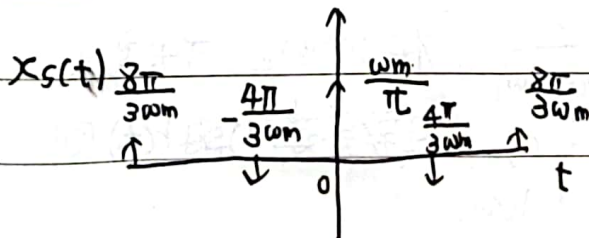
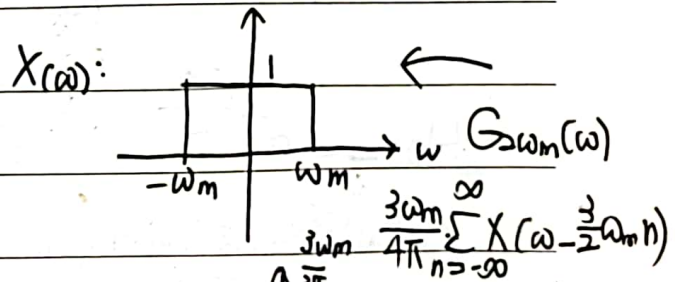
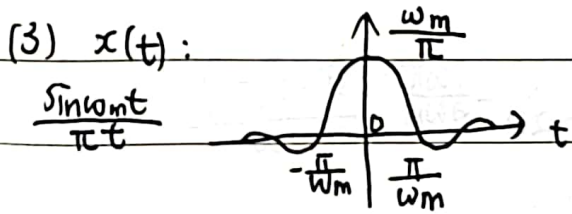
$$(1) x(t) = \frac{\sin \omega_m t}{\pi t}, \quad X(\omega) = G_{2\omega_m}(\omega), \quad X_s(\omega) = \frac{1}{T} \sum_{n=-\infty}^{\infty} X(\omega - \omega_s \cdot n), \quad T = \frac{2\pi}{3\omega_m}, \quad \omega_s = 3\omega_m$$

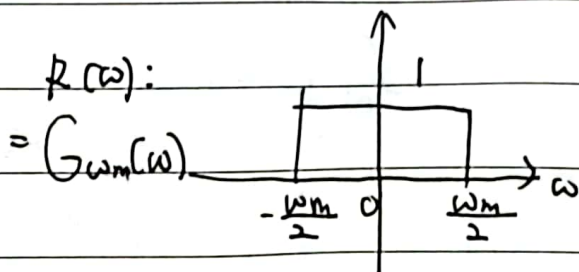
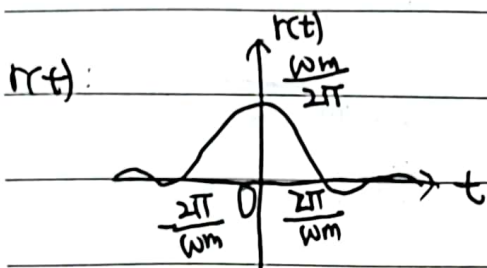
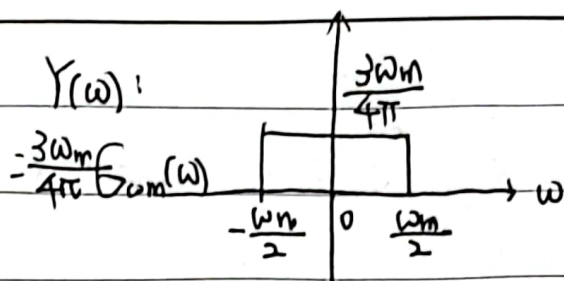
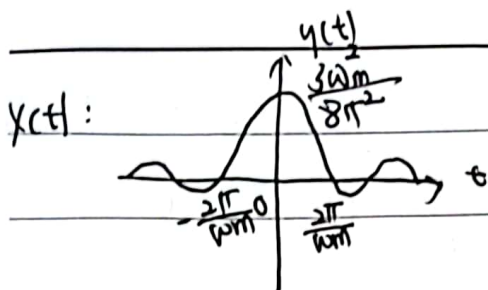
$$Y(\omega) = X_s(\omega) \cdot H(\omega) = \frac{3\omega_m}{2\pi} G_{\omega_m}(\omega), \quad R(\omega) = Y(\omega) \cdot H_R(\omega) = G_{\omega_m}(\omega)$$

$$r(t) = x(t)$$



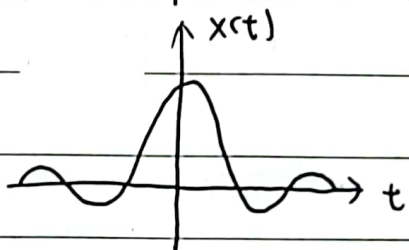
(2) $\omega_m \leq \omega_c < 2\omega_m$



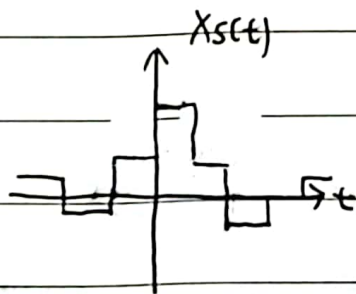


(4) $\frac{3\omega_m}{2} \leq \frac{2\pi}{T}$, $T \leq \frac{4\pi}{3\omega_m}$

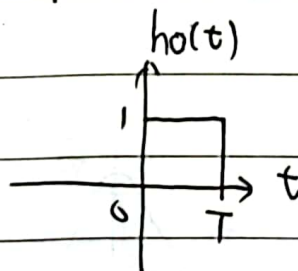
(5)



$T = \frac{2\pi}{3\omega_m}$



$\frac{X_s(\omega)}{H_o(\omega)}$ 就表示冲激率采样后的频谱



$\frac{X_s(\omega)}{H_o(\omega)} \cdot H(\omega) \cdot H_r(\omega) = R(\omega)$

\therefore 新 $H_r'(\omega) = \frac{H_r(\omega)}{H_o(\omega)}$, $H_r(\omega) = \begin{cases} T & |\omega| < \omega_m \\ 0 & o.w. \end{cases}$

$H_o(\omega) = e^{-\frac{j\omega T}{2}} \cdot \frac{2\sin(\frac{T\omega}{2})}{\omega} = 2e^{-\frac{j\pi\omega}{3\omega_m}} \cdot \frac{\sin(\frac{\pi}{3\omega_m}\omega)}{\omega}$

但 (1) 似乎未 perfectly reconstruct?

若 perfect: $H_r(\omega) = \frac{X_r(\omega)}{Y(\omega)} = \frac{G_{2\omega_m}(\omega)}{\frac{3\omega_m}{2\pi} G_{\omega_m}(\omega)}$ 在 $\omega > \omega_m$ 时无意义

无此 $H_r(\omega)$ $\xrightarrow{\frac{2\pi}{3\omega_m}}$ 无此 $H_r'(\omega)$, 但要重建 (1) 的 $r(t)$ 则

$H_r'(\omega) = \begin{cases} 2e^{-\frac{j\pi\omega}{3\omega_m}} \frac{\sin(\frac{\pi}{3\omega_m}\omega)}{\omega} & |\omega| < \omega_m \\ 0 & o.w. \end{cases}$