$$y(t) = x(t) \cdot p(t)$$

$$Y(j\omega) = \frac{1}{2\pi} X(j\omega) * P(j\omega)$$

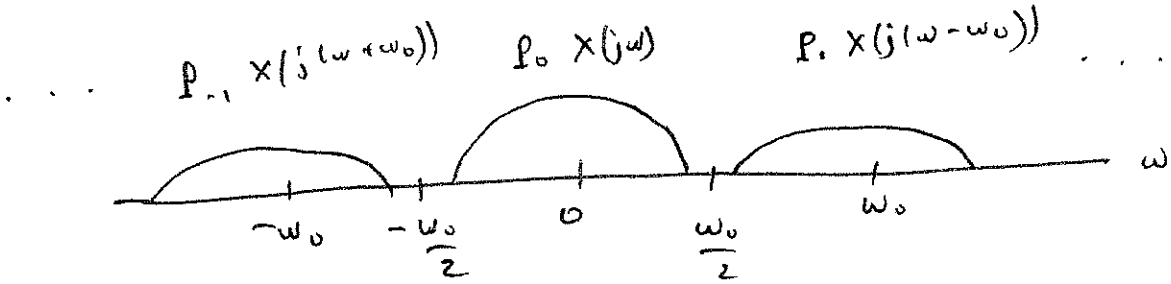
$$p(t) = \sum_{n=-\infty}^{\infty} P_n e^{jn\omega_0 t}$$

$$P(j\omega) = 2\pi \sum_{n=-\infty}^{\infty} P_n \delta(\omega - n\omega_0)$$

$$Y(j\omega) = \frac{1}{2\pi} X(j\omega) * 2\pi \sum_{n=-\infty}^{\infty} P_n \delta(\omega - n\omega_0)$$

$$= \sum_{n=-\infty}^{\infty} P_n X(j(\omega - n\omega_0))$$

If we can have $z(t) = x(t)$, we must have the following picture



Need $\omega_m \le \frac{\omega_0}{2}$

$$\omega_m \le W \le \omega_0 - \omega_m$$

$$G = \frac{1}{P_0}$$

$$P_0 = \frac{1}{T_0} \int_{T_0} p(t)\, dt = \frac{6}{8} = \frac{3}{4}$$

So $G = \frac{4}{3}$