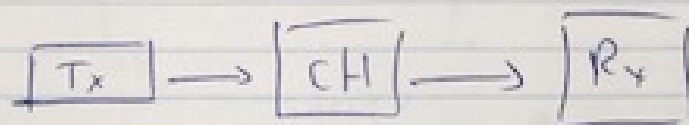
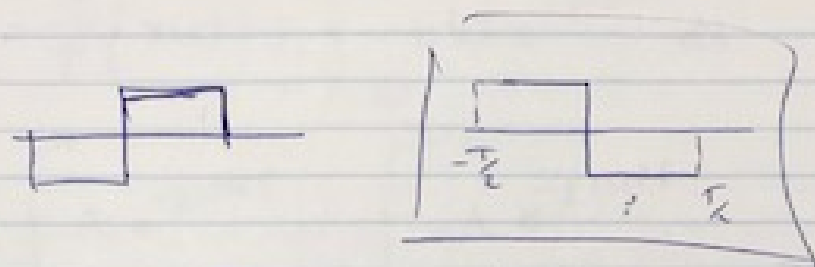


$$\text{SNR}_{dB} = \frac{10 \log P}{-10 \log T} + \frac{-10 \log k}{-10 \log B}$$

$$\underline{\underline{\text{SNR}_{dB}}} = X - \underline{\underline{10 \log T}} = 13.1 \text{ dB}$$

$$\underline{\underline{\text{SNR}}} \quad X = \underline{\underline{13.1 + 10 \log T}}$$

$$\text{SNR}_{dB} = X - 10 \log T_{\text{new}}$$



$$h_{\text{eff}}(t) = x(t) \otimes ch \otimes y(t)$$

$$H(f) = X(f) CH(f) Y(f)$$

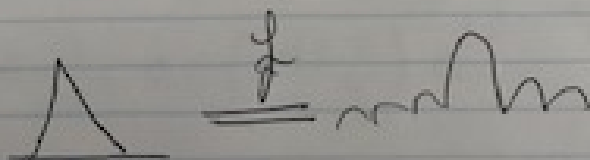
$$= X(f) Y(f)$$

$$CH(f) = 1$$

$$= |G(f)|^2$$

sin z

$$\sin \theta = \frac{e^{\theta} - e^{-\theta}}{2j}$$



$$X(f) = \mathcal{F}\{x(t)\} = \int_{-\infty}^{\infty} x(t) e^{-j2\pi f t} dt$$

$$= \int_{-\frac{T}{2}}^0 A e^{-j2\pi f t} dt + \int_0^{+\frac{T}{2}} -A e^{-j2\pi f t} dt$$

$$= \frac{1}{-j2\pi f} A e^{-j2\pi f t} \Big|_{-\frac{T}{2}}^0 - \frac{1}{-j2\pi f} A e^{-j2\pi f t} \Big|_0^{+\frac{T}{2}}$$

$$= \frac{1}{-j2\pi f} A \left[e^{-j2\pi f \cdot 0} - e^{+j2\pi f \frac{T}{2}} \right] - \frac{1}{-j2\pi f} A \left[e^{+j2\pi f \frac{T}{2}} - e^{-j2\pi f \cdot 0} \right]$$

$$= \frac{1}{-j2\pi f} A \left[e^{-j2\pi f T} - e^{-j2\pi f \cdot 0} \right]$$

$$= \frac{1}{-j2\pi f} A e^{+j2\pi f \frac{T}{4}} \left[e^{-j2\pi f \frac{T}{4}} - e^{+j2\pi f \frac{T}{4}} \right]$$

$$= \frac{1}{+j2\pi f} A e^{-j2\pi f \frac{T}{4}} \left[e^{-j2\pi f \frac{T}{4}} - e^{+j2\pi f \frac{T}{4}} \right]$$

$$= A \frac{1}{\pi f} \sin\left(2\pi f \frac{T}{4}\right) e^{+j2\pi f \frac{T}{4}}$$

$$= -A \frac{1}{\pi f} \sin\left(2\pi f \frac{T}{4}\right) e^{-j2\pi f \frac{T}{4}}$$

$$= A \frac{1}{\pi f} \sin\left(\frac{\pi f T}{2}\right) \left[\frac{e^{j2\pi f \frac{T}{4}}}{\ominus} \frac{e^{-j2\pi f \frac{T}{4}}}{\ominus} \right]$$

$$= A \frac{1}{\pi f} \sin\left(\frac{\pi f T}{2}\right) 2j \sin\left(\frac{\pi f T}{4}\right)$$

$$= A(2j) \frac{\sin^2\left(\frac{\pi f T}{2}\right)}{\pi f T/2} T/2$$

$$= 2j A T/4 \operatorname{sinc}\left(\pi f T/2\right) \sin\left(\pi f T/2\right)$$

$$\operatorname{sinc} x = \frac{\sin x}{x}$$

$$H(f) = |h(f)|^2$$



$$= A^2 T^2 \operatorname{sinc}^2\left(\pi f T/2\right) \sin^2\left(\pi f T/2\right)$$

