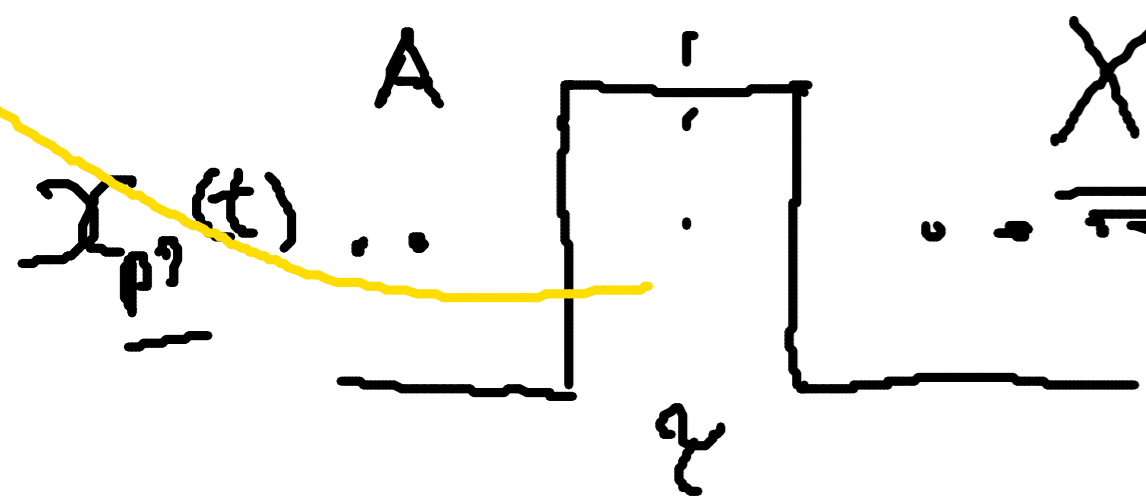


$$X_2(f) = A \text{sinc}(f\pi T)$$

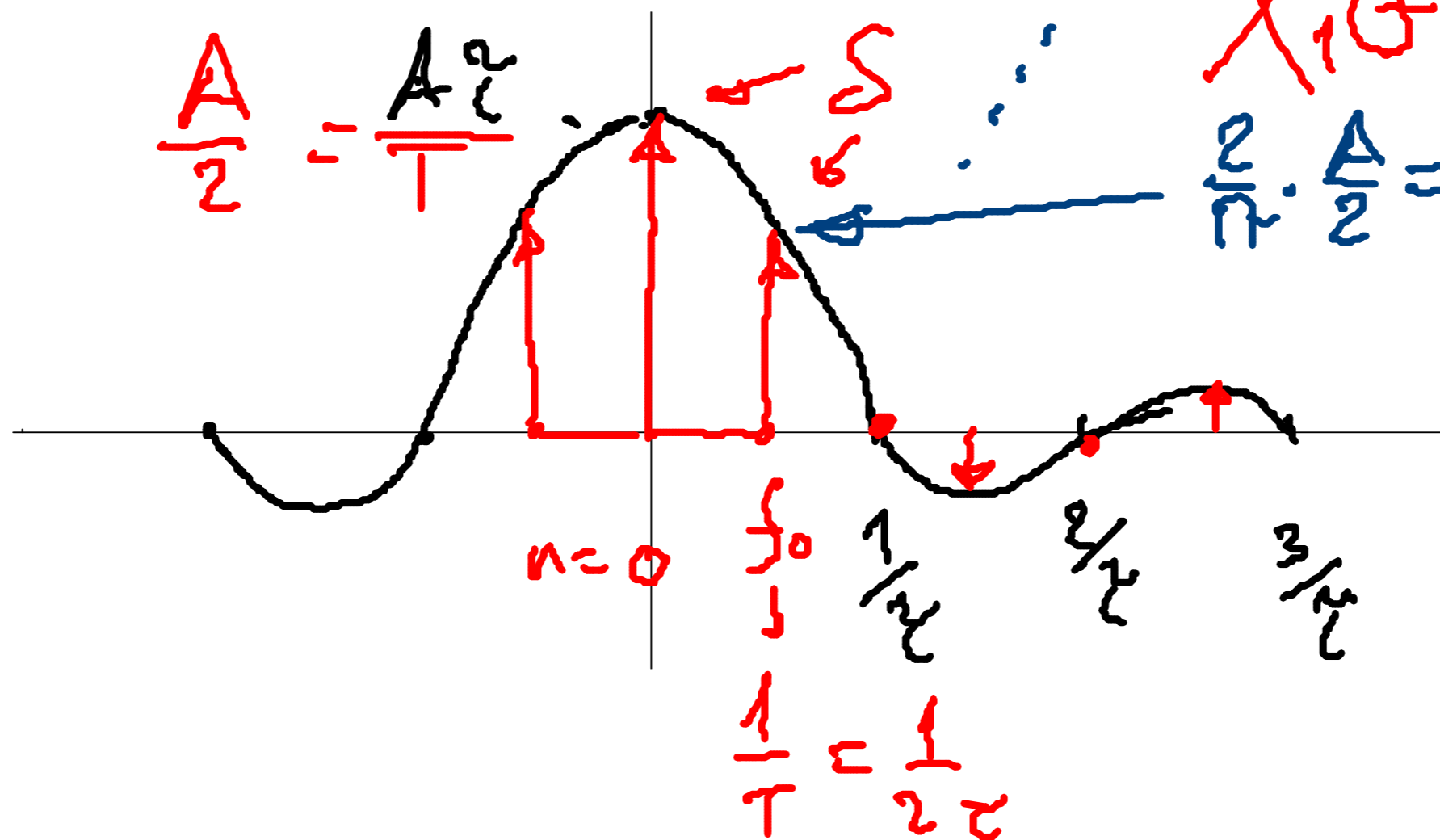
$$\text{sinc}\left(\frac{\pi}{2}\right) = \frac{\text{sinc}(\pi/2)}{\pi/2} = \frac{2}{\pi}$$



$$X_{p1}(f) = A\tau \text{sinc}(f\pi\tau)$$

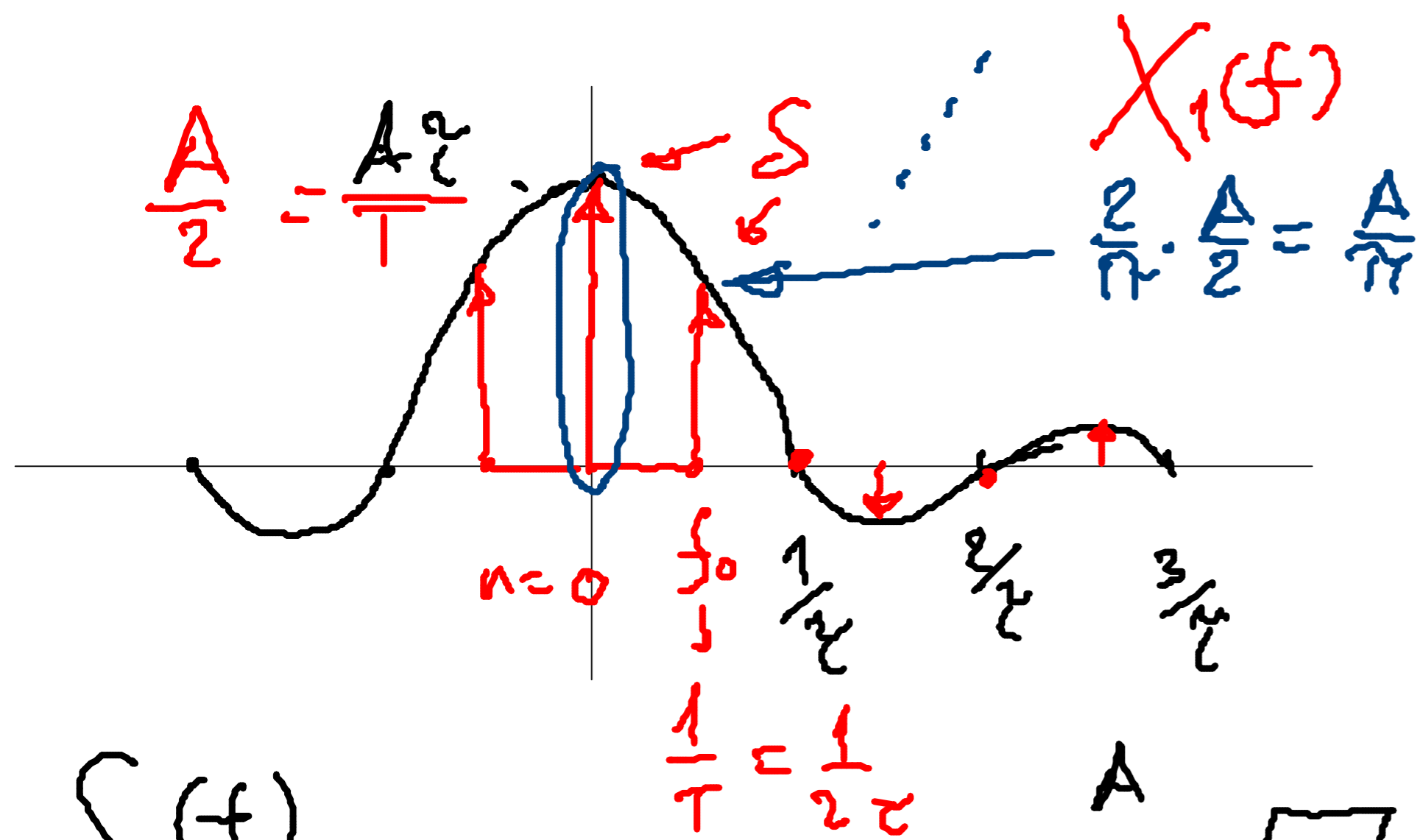
$$\frac{A\tau}{T} = \frac{A}{2}$$

$$\frac{A}{2} = \frac{A\tau}{T}$$



$$\frac{2}{\pi} \cdot \frac{A}{2} = \frac{A}{\pi}$$

- $C_0 = \frac{A}{2}$
- $C_1 = \frac{A}{\pi} \cdot \frac{1}{1}$
- $C_2 = 0$
- $C_3 = \frac{A}{\pi} \cdot \frac{1}{3}$
- $C_4 = 0$
- $C_5 = \frac{A}{\pi} \cdot \frac{1}{5}$



$C_0 = \frac{A}{2}$   
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 $C_4 = 0$   
 $C_5 = \frac{A}{\pi} \cdot \frac{1}{5}$

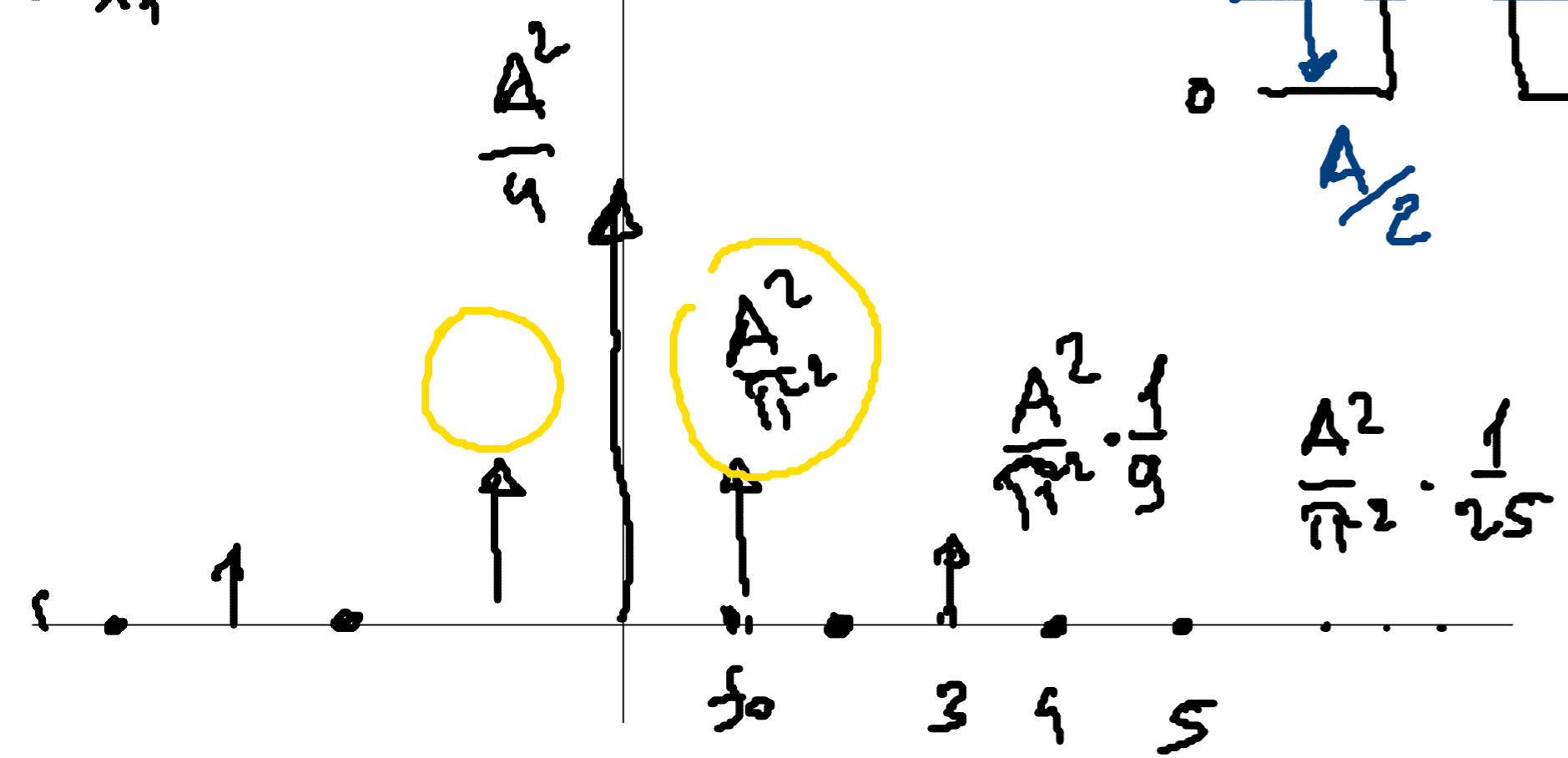
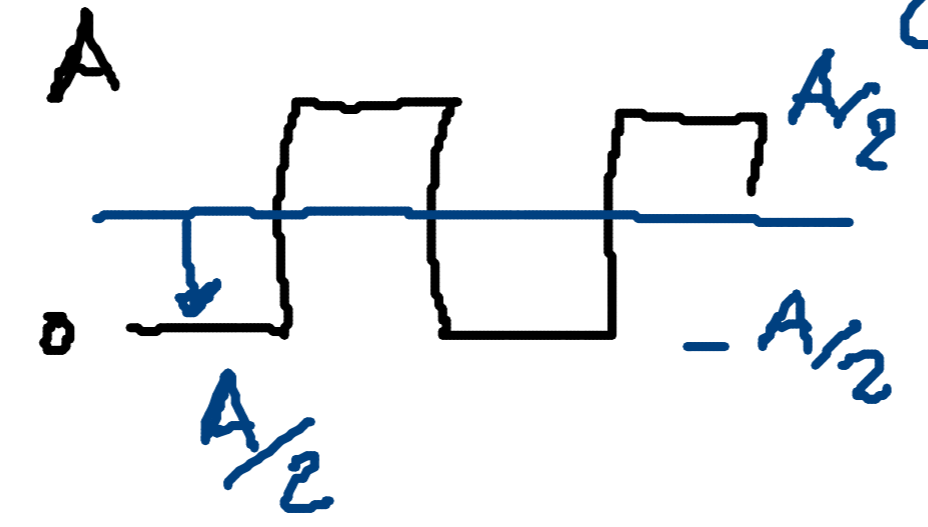
$P = \frac{A^2}{T} \cdot \frac{T}{2} = \frac{A^2}{2}$

$P = P_{CO} + P_{ac}$

$= \left(\frac{A}{2}\right)^2$

$\frac{A^2}{2} = \frac{A^2}{4} + \frac{A^2}{4}$

$S_{X_1}(f)$

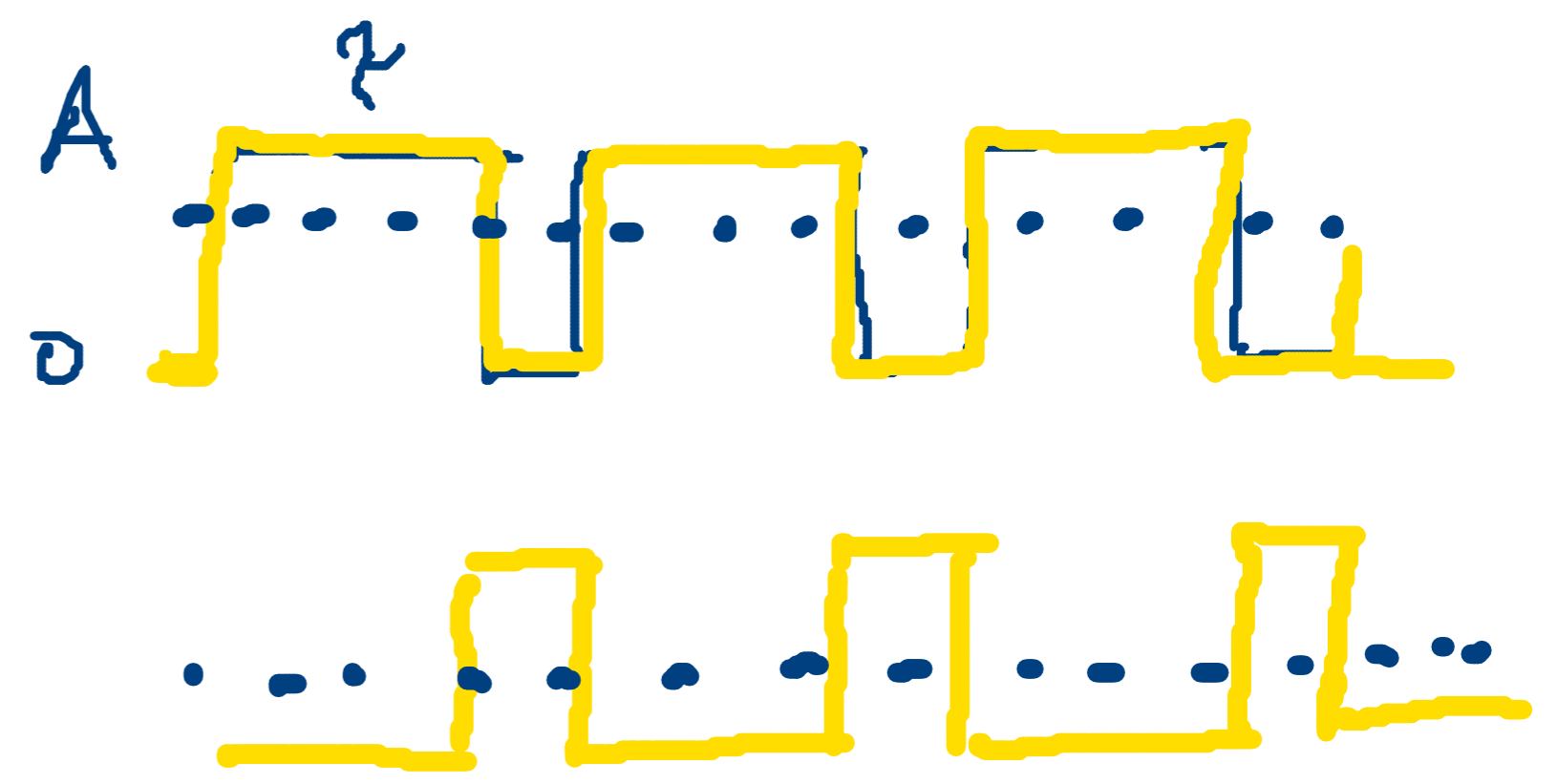
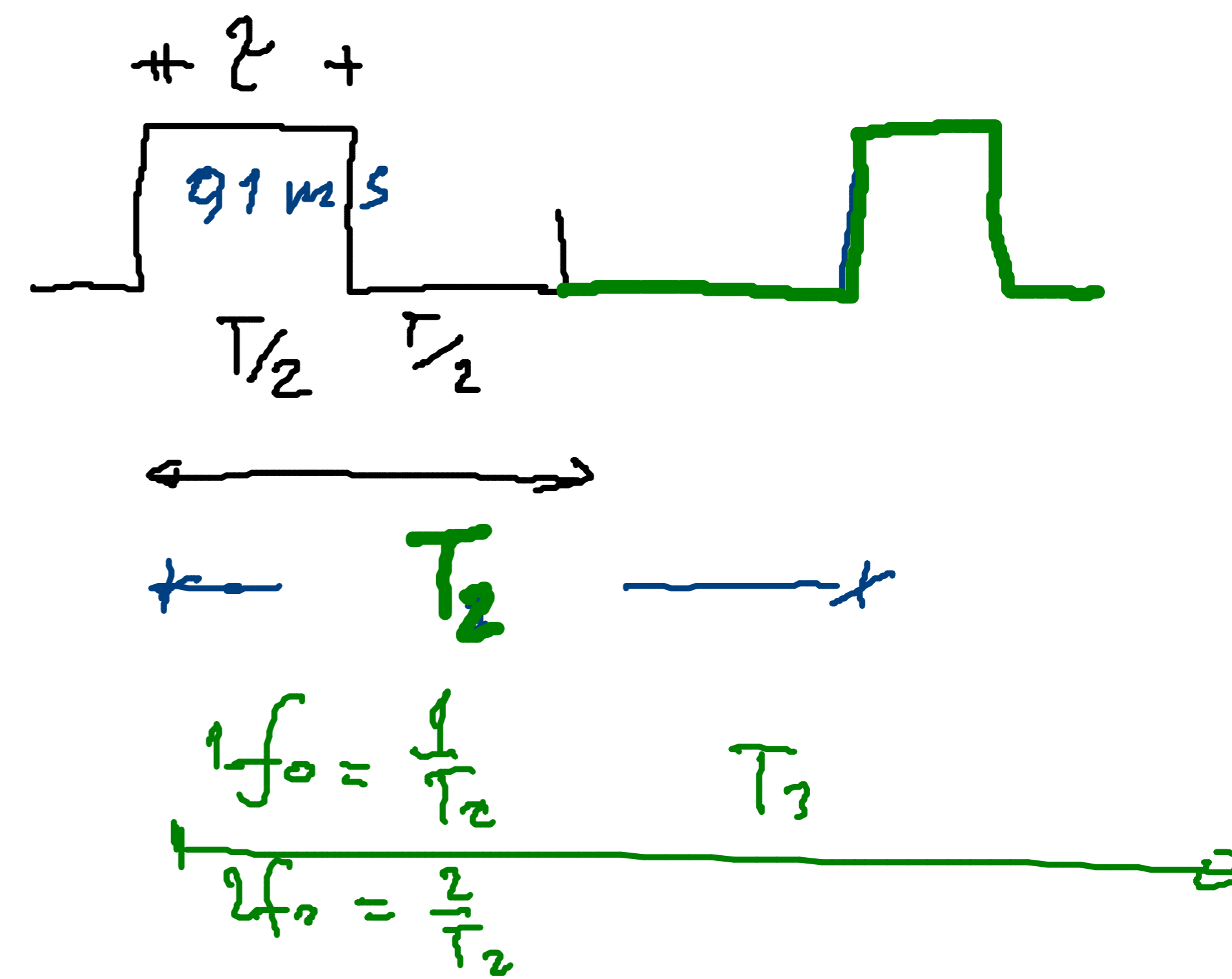
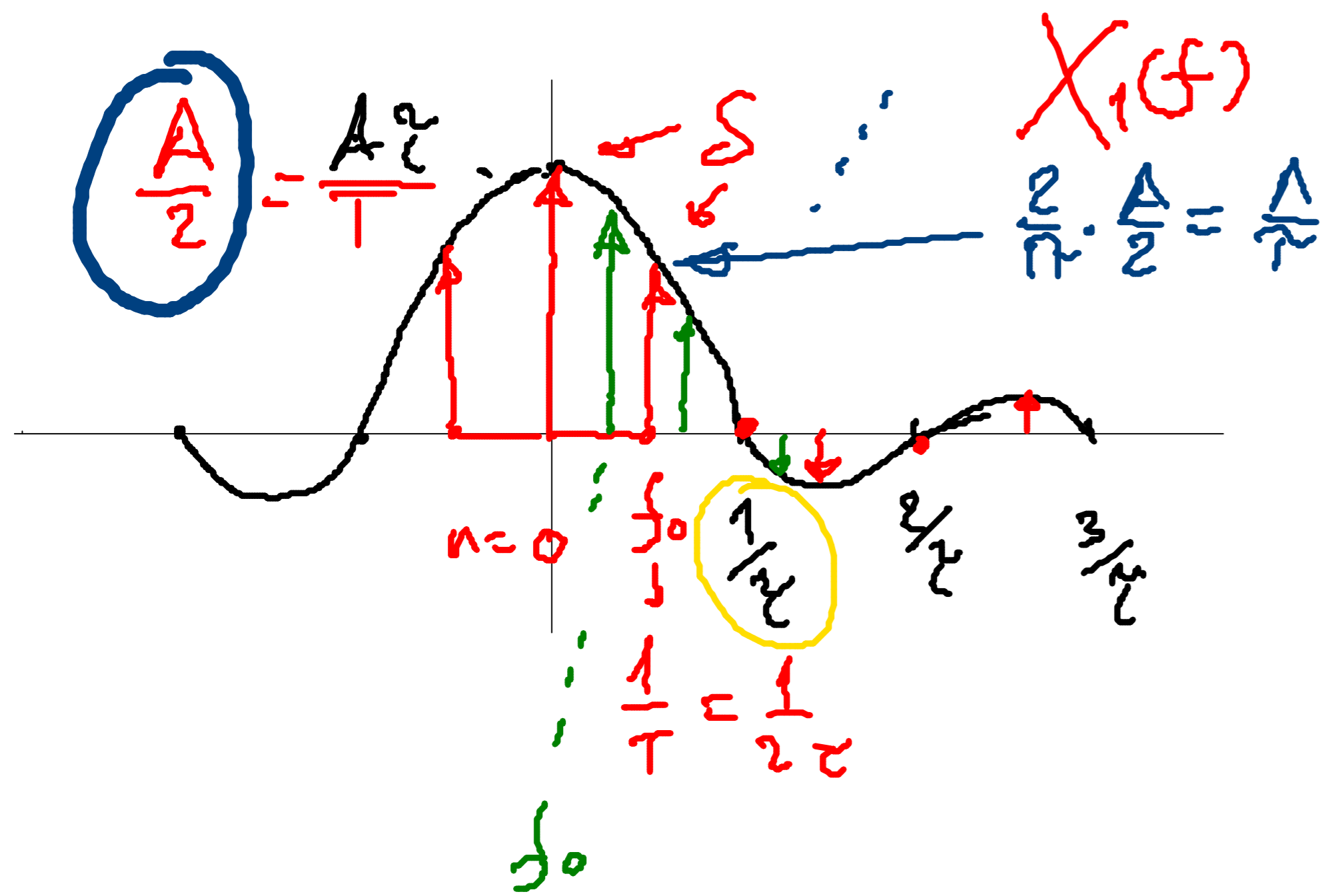


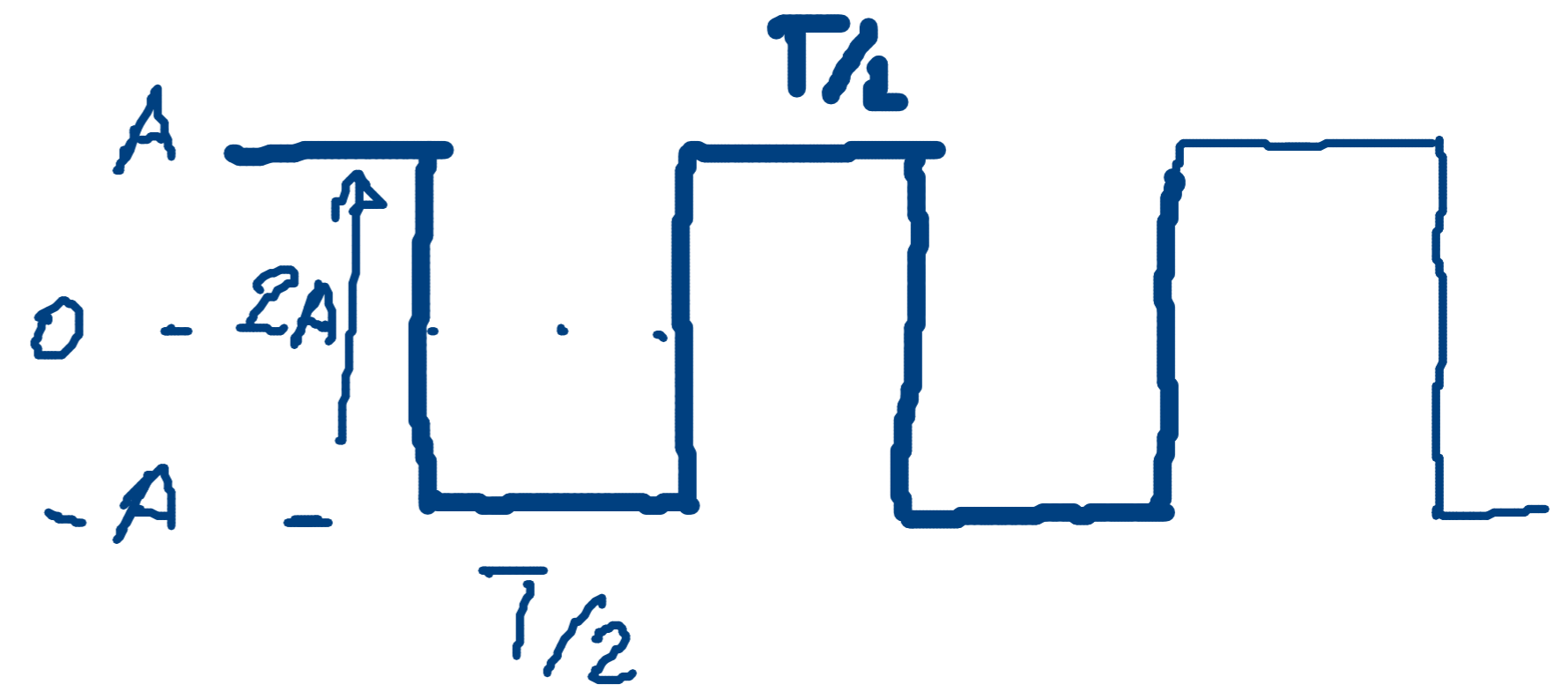
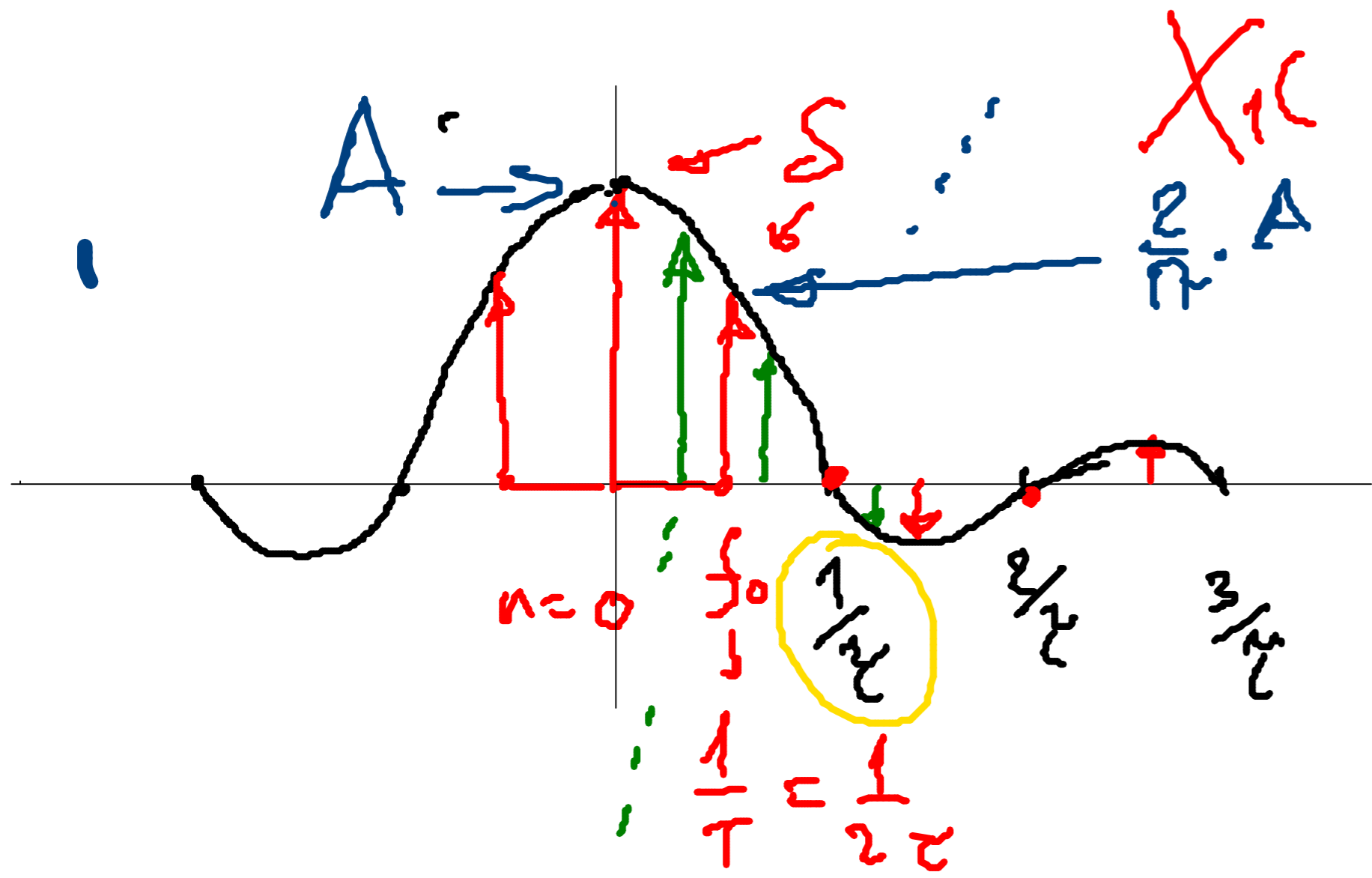
$P_1 = P_{f_1} + P_{f_{-1}} = \frac{2}{\pi^2} A^2$

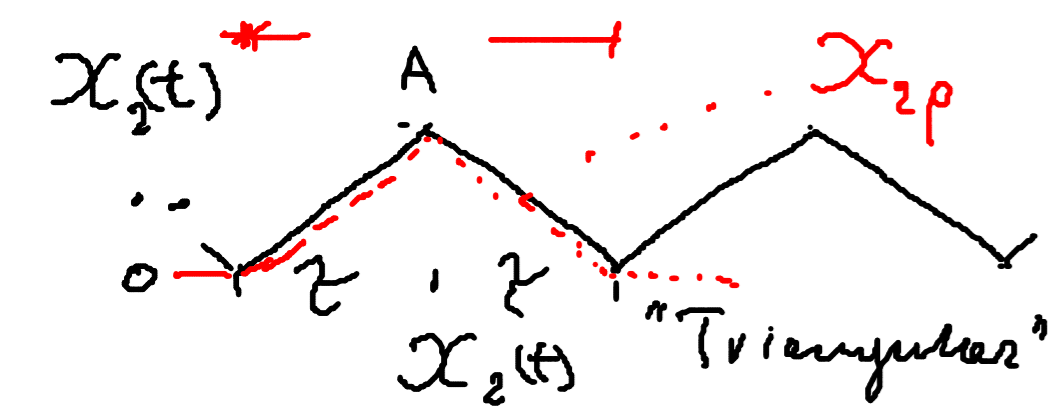
$\frac{P_1}{P_{ac}} = \frac{\frac{2}{\pi^2} A^2}{\frac{1}{2} A^2} = \frac{2}{\pi^2} \cdot 4 = \frac{8}{\pi^2}$

81,1%

$S_{X_1}(f) = \sum_{n=-\infty}^{\infty} |C_n| \delta(f - n f_0)$





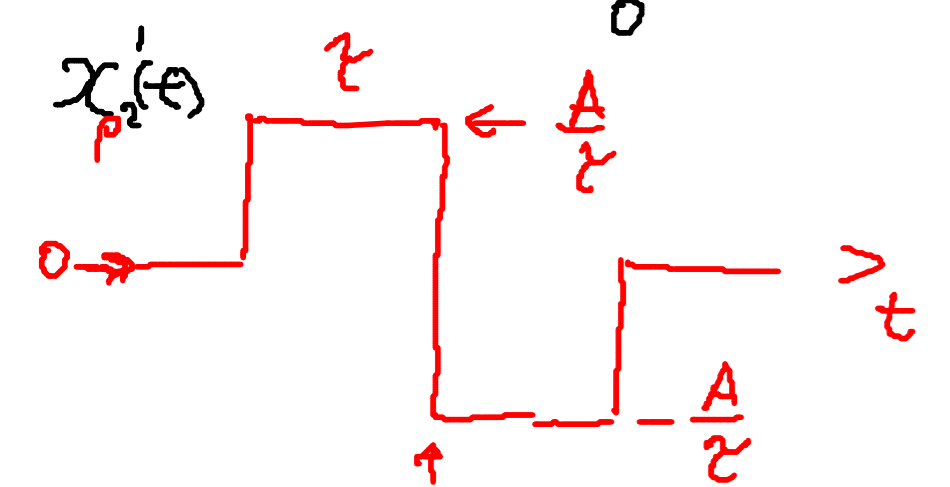


$$x(t) \leftrightarrow X(f) \quad \mathcal{L}\left\{\frac{dx}{dt}\right\} = s \cdot X(s)$$

$$y(t) = \frac{dx(t)}{dt} \leftrightarrow Y(f) = F\left\{\frac{dx(t)}{dt}\right\}$$

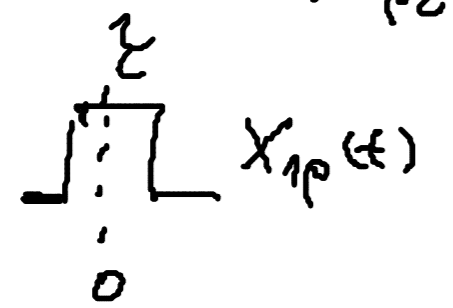
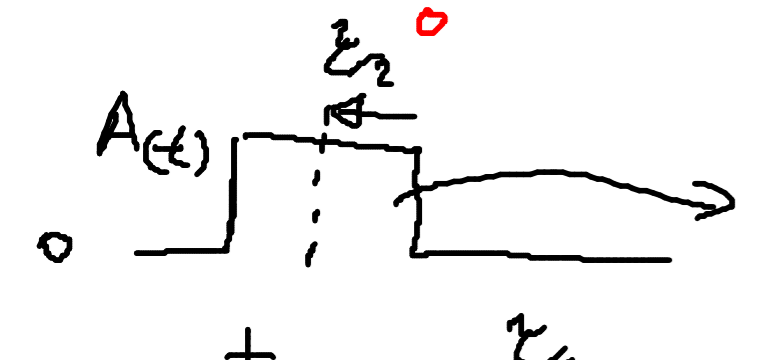
$$Y(f) = j 2\pi f \cdot X(f)$$

$$X(f) = \frac{Y(f)}{j 2\pi f}$$

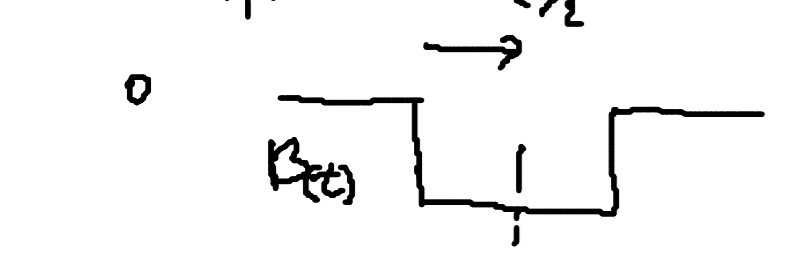


$$x'_{p2}(t) = A(t) + B(t)$$

$$X_{p2}(f) = F\{A\} + F\{B\}$$



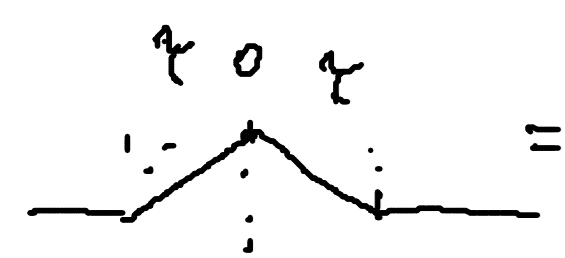
$$A(t) = X_{1p}(t + \tau_2) \quad ; \quad B(t) = -X_{1p}(t - \tau_2)$$



$$X_{p2}(f) = \frac{A}{\tau} \cancel{\tau} \text{sinc}(\tau\pi f) \cdot e^{+j2\pi f \tau_2} - \frac{A}{2} \text{sinc}(\tau\pi f) e^{-j2\pi f \tau_2}$$

error

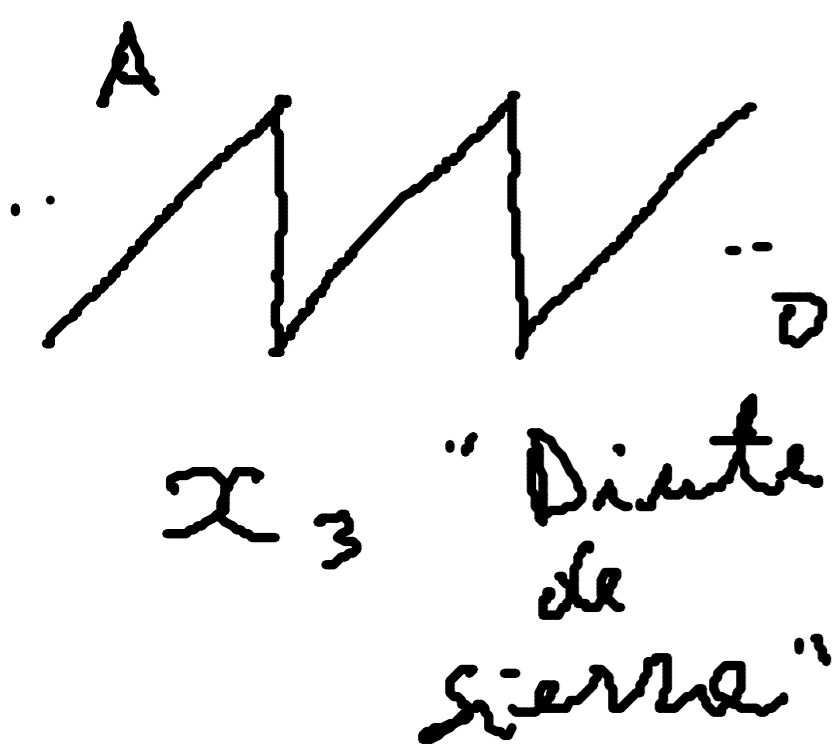
$$= \frac{A}{\cancel{\tau}} \text{sinc}(\tau\pi f) \cdot \frac{(e^{j2\pi f \tau} - e^{-j2\pi f \tau})}{2j \tau \pi f} \cdot 2j \cdot \tau \pi f$$



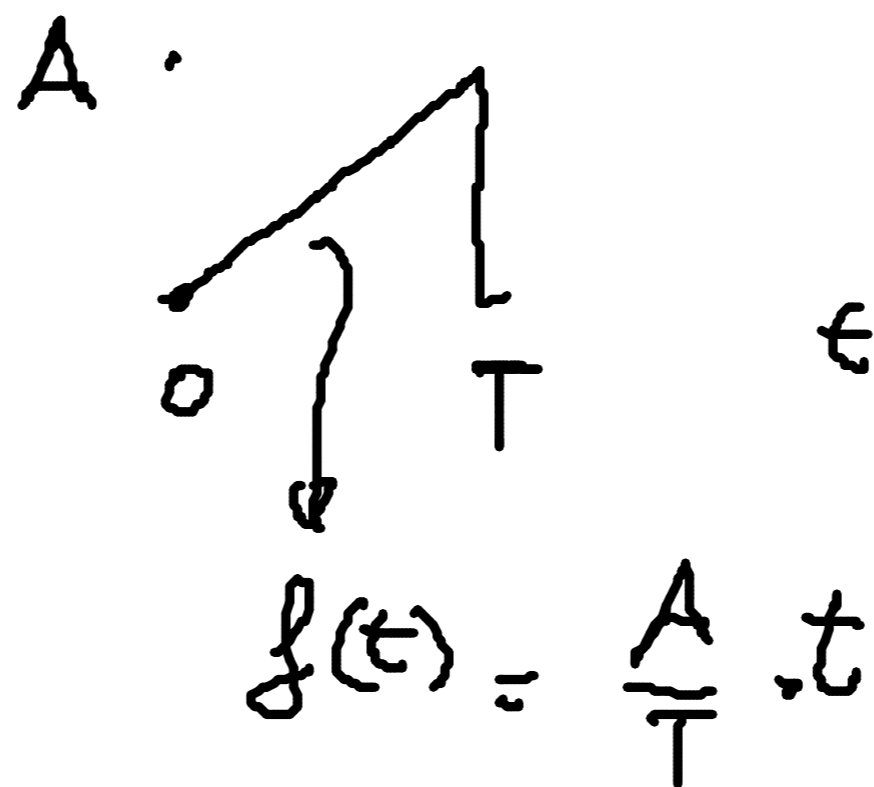
$$= 2A \tau \pi f j \cdot \text{sinc}^2(\tau\pi f)$$

$$X_{p2}(f) = \frac{X'_{p2}}{2j\pi f} = \frac{2 \cdot A \cdot \tau \pi f j \cdot \text{sinc}^2(\tau\pi f)}{2j\pi f} = \frac{A \tau}{\cancel{\tau}} \text{sinc}^2(\tau\pi f)$$





$x_{p3}$



Serie exponencial  
 $f_0 = \frac{1}{T}$

$$C_n = \frac{1}{T} \int_0^T \frac{A}{T} \cdot t \cdot e^{-j2\pi f_0 n t} \cdot dt = \frac{A}{T^2} \int_0^T t e^{-j2\pi f_0 n t} dt$$

( $n \in \mathbb{Z}$ )

$$C_n = \frac{A}{T^2}$$

$$\int_0^T z \cdot e^{az} \cdot dz = \frac{e^{az}}{a^2} (az - 1) \Big|_0^T$$

$$C_0 = \frac{A}{T^2}$$

$$C_n = \frac{A j}{2\pi n}$$

$$|C_n| = \frac{A}{2\pi n}$$

$$C_0 = \frac{A}{2}$$