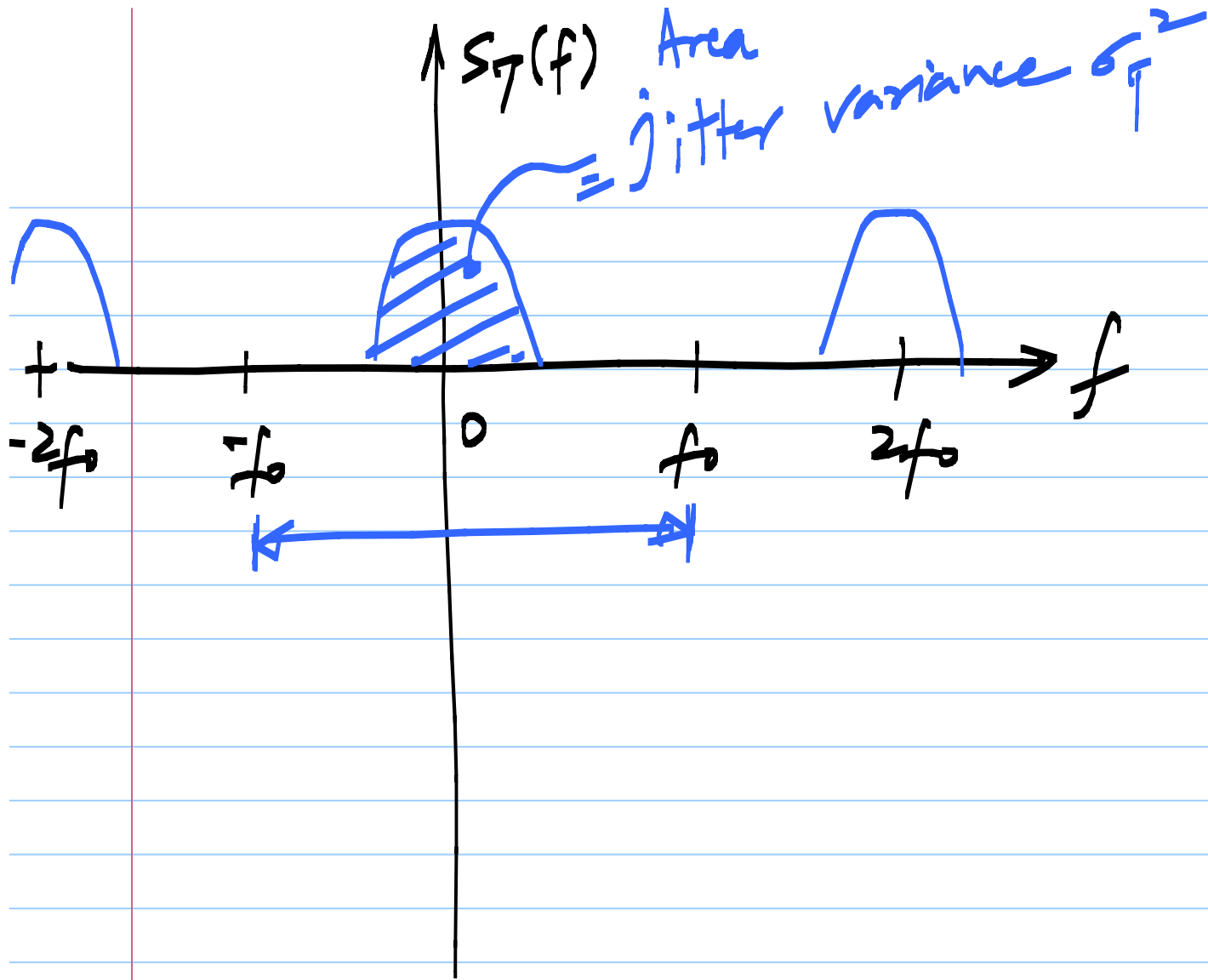
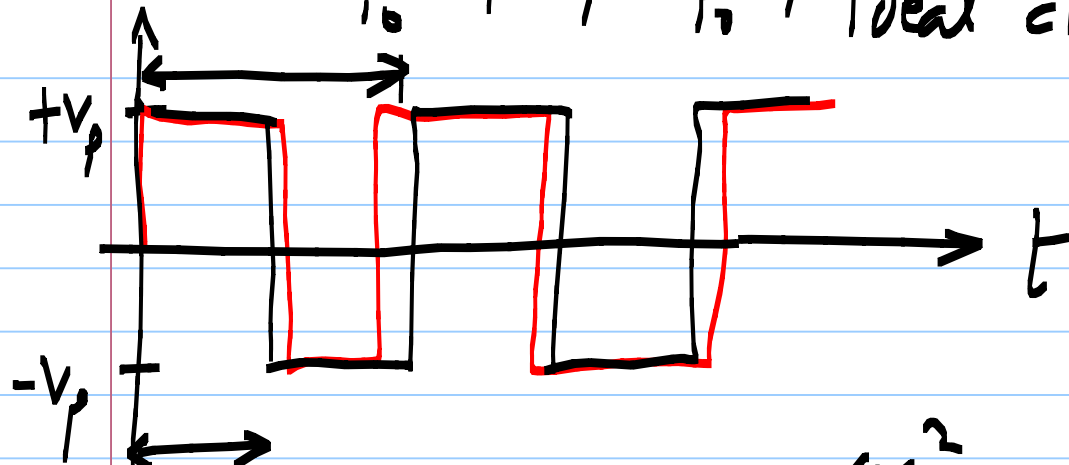


Time jitter: $T[n]$: time difference between actual and ideal zero crossings.

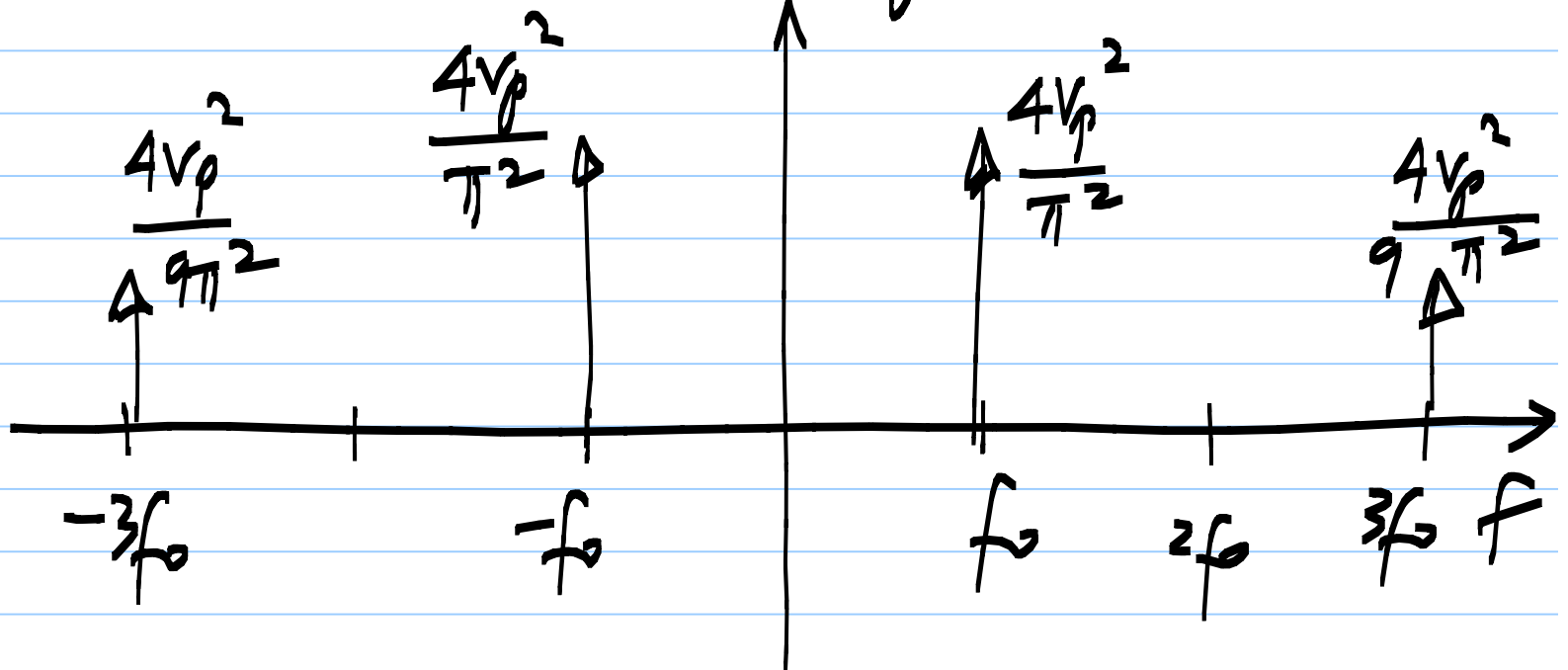


$[T]^2$
 $[T]^3$

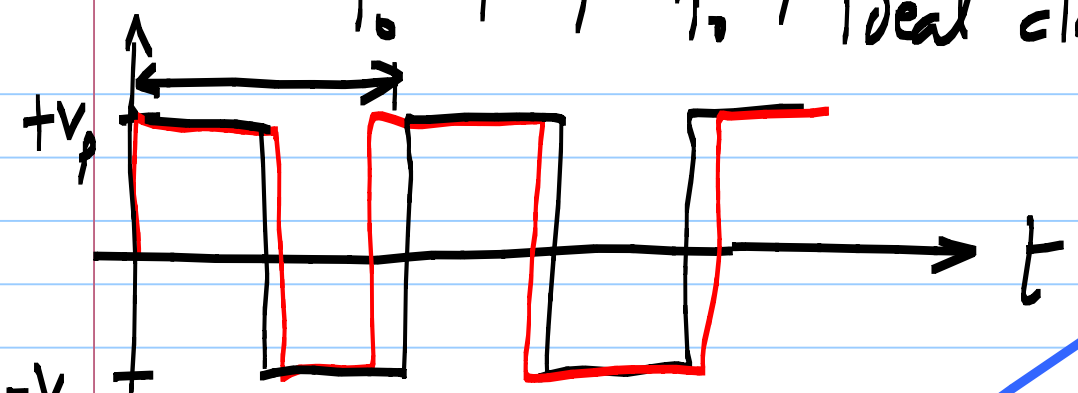
T_0 freq = $\frac{1}{T_0} = f_0$ ideal clock



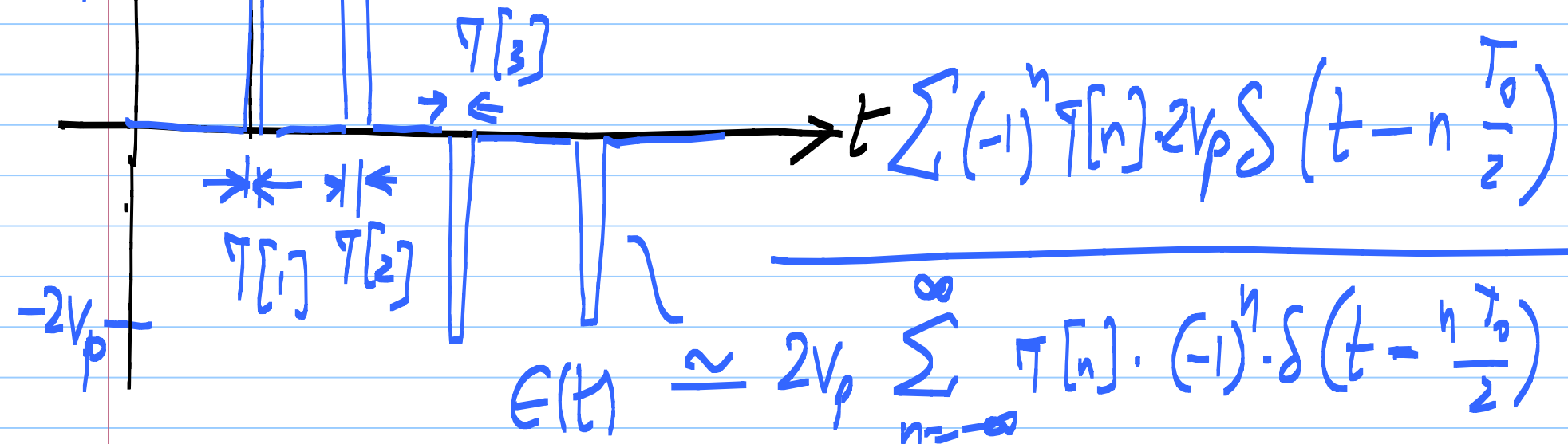
PSD of the ideal clock



freq = $\frac{1}{T_0} = f_0$ ideal clock

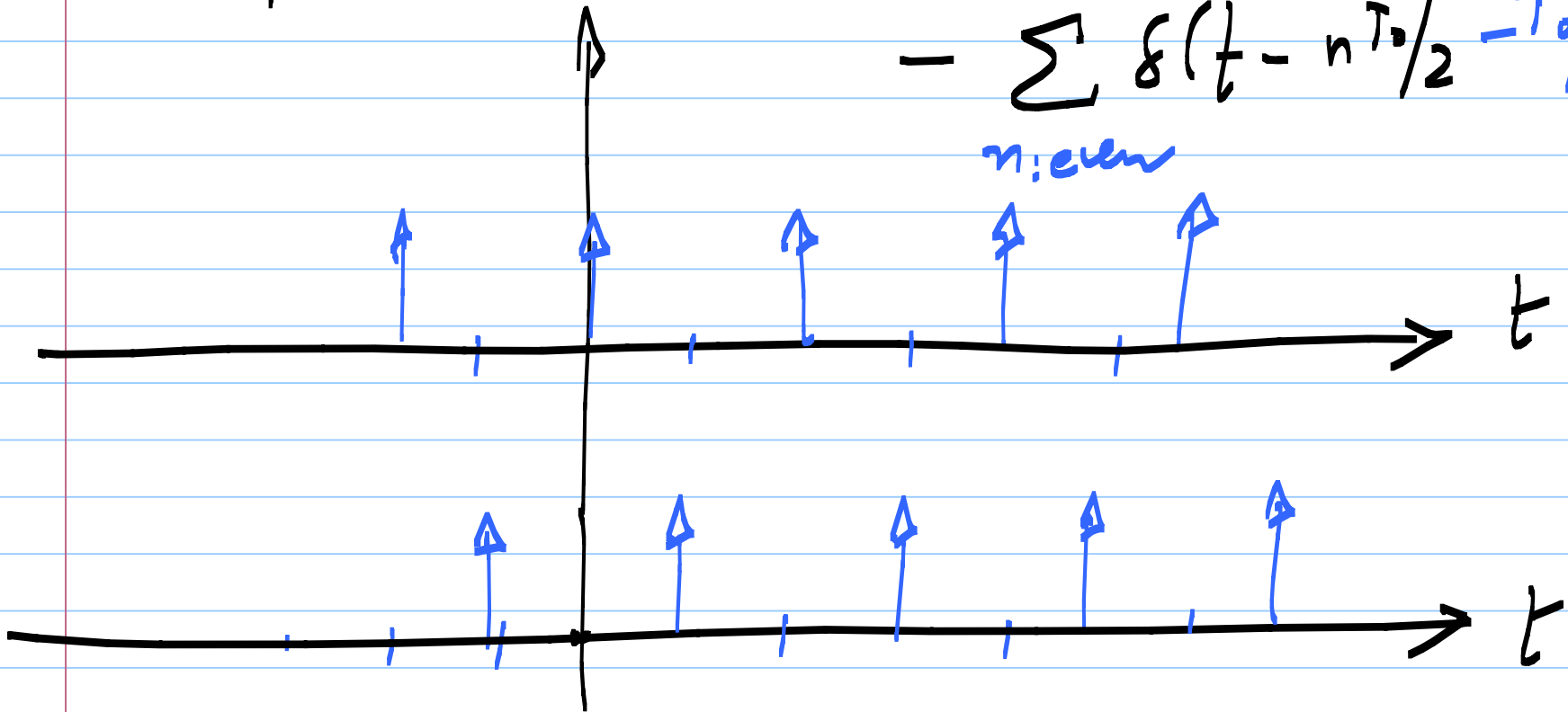


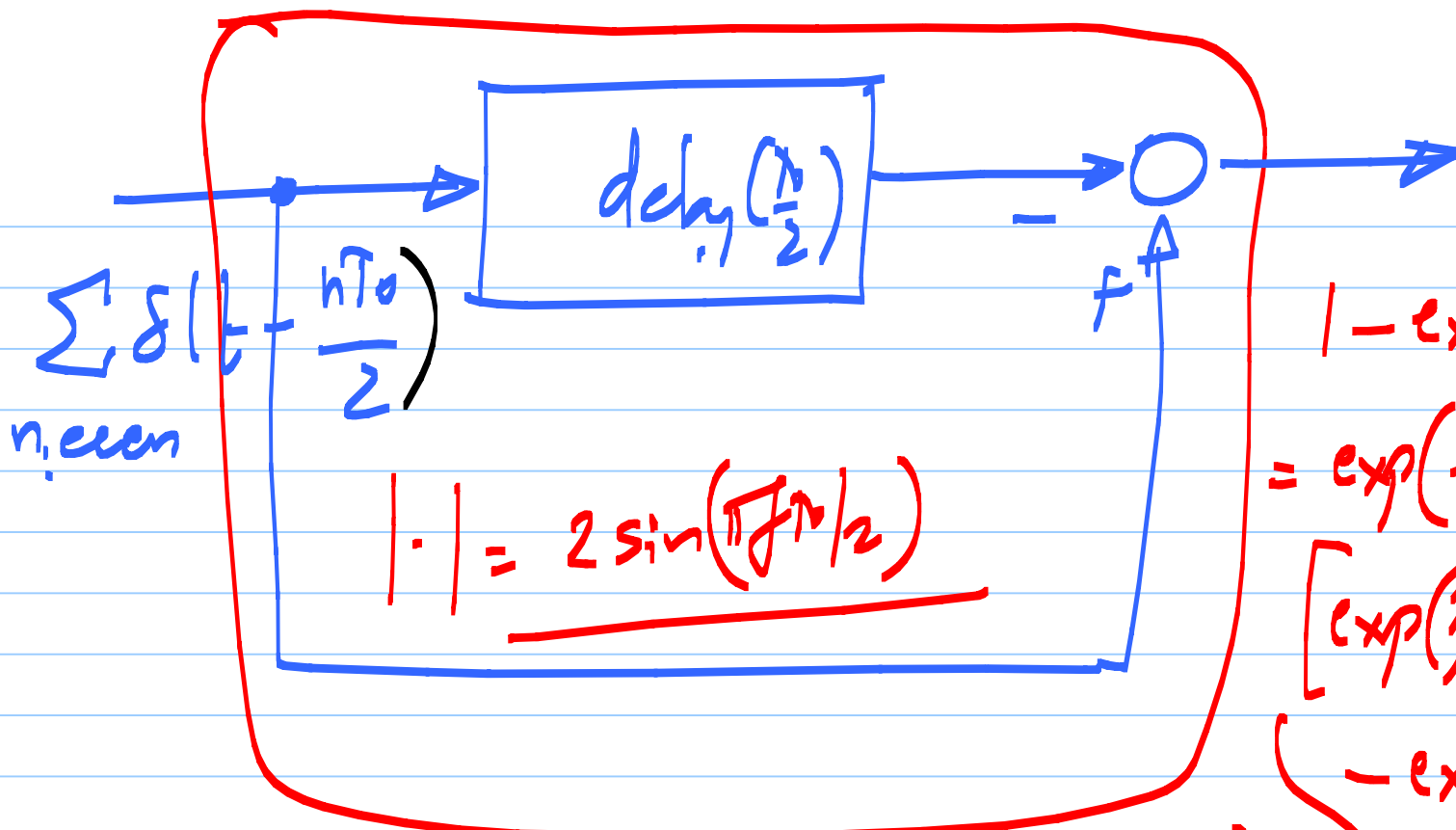
Error: $\frac{\sqrt{2}}{Hz}$
actual - ideal



$$\sum_n (-1)^n \cdot \delta\left(t - n \frac{T_0}{2}\right) = \sum_{n:\text{even}} \delta\left(t - n \frac{T_0}{2}\right)$$

$$- \sum_{n:\text{even}} \delta\left(t - n \frac{T_0}{2} - \frac{T_0}{2}\right)$$





$$\sum_{n, \text{even}} \delta(t - \frac{nT_0}{2})$$

delay($\frac{T_0}{2}$)

f

$$| \cdot | = 2 \sin(\pi f T_0 / 2)$$

$$1 - \exp(-j \pi f T_0)$$

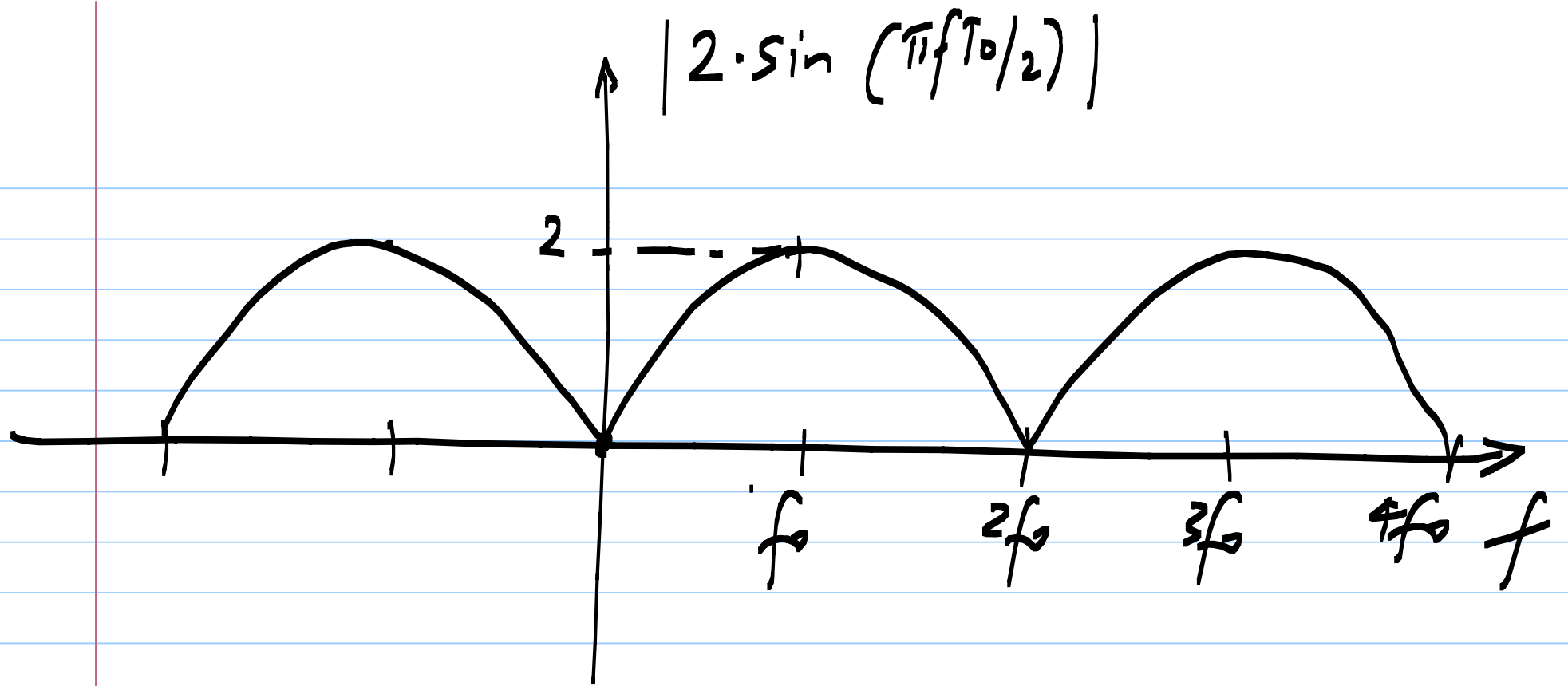
$$= \exp(-j \frac{\pi f T_0}{2})$$

$$\left[\exp(j \frac{\pi f T_0}{2}) - \exp(-j \frac{\pi f T_0}{2}) \right]$$

$$\left[\frac{1 - \exp(-j 2 \pi f \cdot \frac{T_0}{2})}{j 2 \sin(\frac{\pi f T_0}{2})} \right]$$

$$j 2 \sin(\frac{\pi f T_0}{2})$$

f



Discrete-time sequence $x[n]$ modulating an impulse train $\sum_n \delta(t - nT_s)$ $\sum_n x[n] \delta(t - nT_s)$

