$s(n) = 1,2 \times (1 - 0,2^{n+1})$

$$G(z) = \frac{1 - 2z^{-1}}{1 - 1,2z^{-1} + 0,2z^{-2}}$$

$$= \frac{1}{1 - 1,2z^{-1} + 0,2z^{-2}} - \frac{2z^{-1}}{1 - 1,2z^{-1} + 0,2z^{-2}}$$

$$= S(z) - 2z^{-1} S(z)$$

$$\Rightarrow g(n) = \beta(n) - 2s(n-1)$$
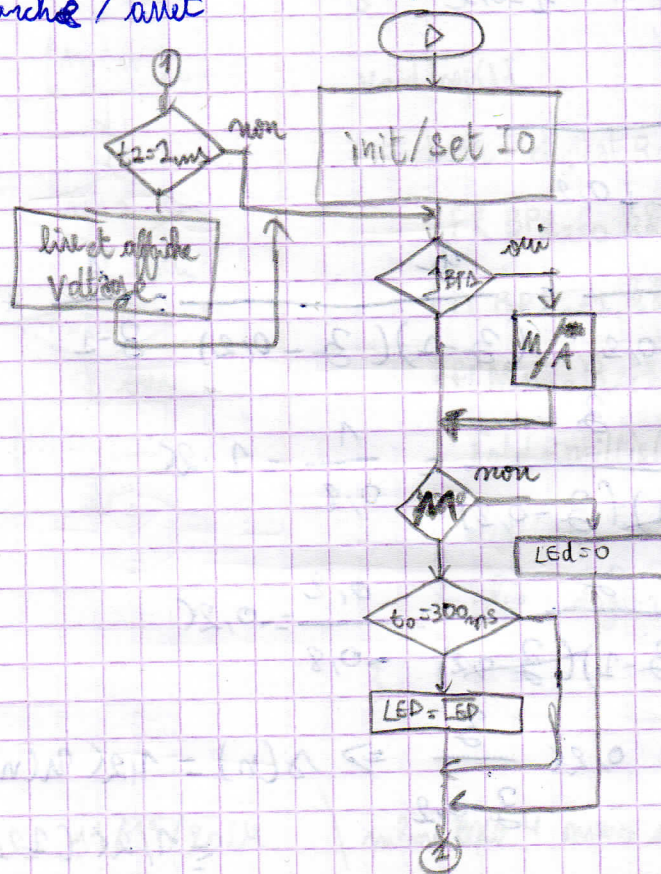
SAMC TD

TD2 - Ex05

- Besoins matérielles :
  - timer 1   - CAN   - LEd - LCd - Vort - Button possoire

- Besoins fonctionelle :
  - chaque 300 ms clignante la led
  -   1 ms lire et afficher le voltage dans LCD et Vort
  - marche / arèt

There are N values of $x(n)$

$$\hat{\varphi}(n) = \frac{\sum_{l=0}^{N-n-1} x(l)\, x(n+l)}{N-n} \qquad n \geqslant 0$$

we have $n + l \leqslant N-1 \;\Rightarrow\; l \leqslant N-n-1$

$$\rightarrow \hat{\varphi}(0) = \frac{\sum_{l=0}^{N-1} x(l)\, x(l)}{N} = \boxed{\frac{\sum x^2(l)}{N} = \hat{P}} \begin{array}{l} \text{estimated} \\ \text{power} \end{array} = \frac{E}{N}$$

$\left. \right\}$ puissance éstimé

$P \Rightarrow \varphi(0) = E[x^2(n)] = P$

puissance

Théorème de Plancherel - Parseval

$$E = \sum_{n=0}^{N-1} x^2(n) = \int_{-\frac{1}{2}}^{\frac{1}{2}} |x(f)|^2 \, df$$

$|x(f)|^2 =$ Energy density " Spectral density "

FT magnitude squared

$$\frac{d\hat{P}}{df} = \frac{d}{df} \frac{E}{N} = \frac{1}{N} \frac{dE}{df} \quad ; \quad \frac{dE}{dt} = |x(f)|^2$$
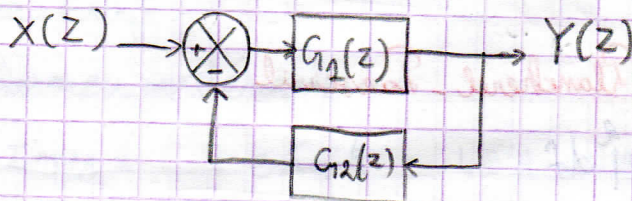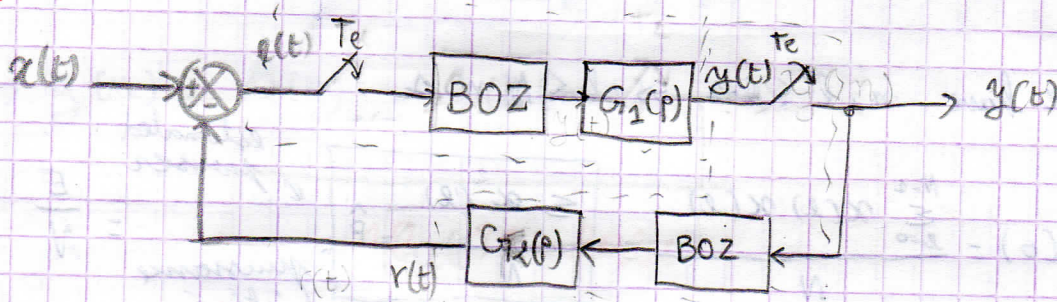
$$\boxed{= \frac{|x(f)|^2}{N}}$$
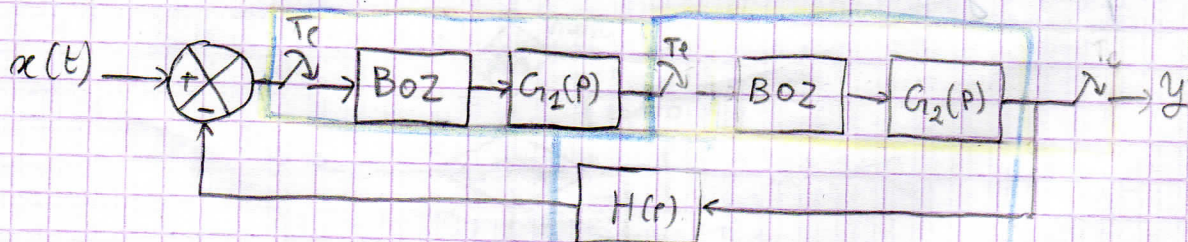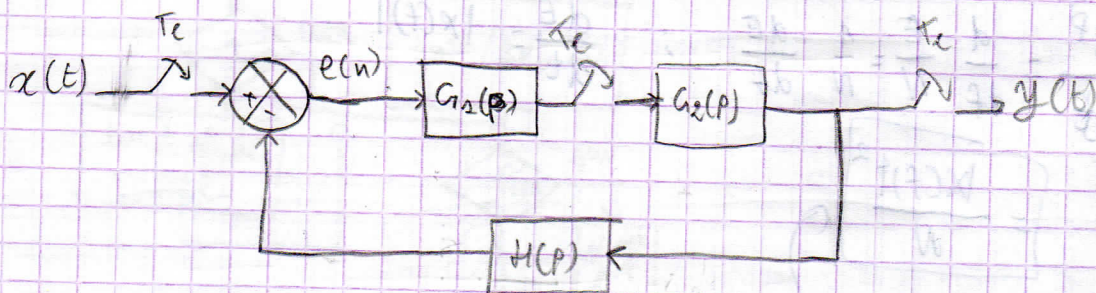
- periodogram

TD. EXO 1 :

$$G(z) = \frac{1}{z^2 - 3z + 2}$$

TD 2. Suite. EXO1 !

$$\frac{Y(z)}{X(z)} = \frac{G_1(z)}{1 + G_{12}(z)\, G_1(z)}$$

$$\frac{Y(z)}{X(z)} = \frac{G_1(z)\, G_2(z)}{1 + G_1(z)\, \overline{HG_{12}}(z)}$$
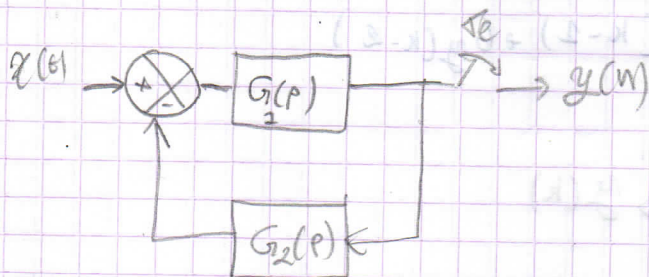
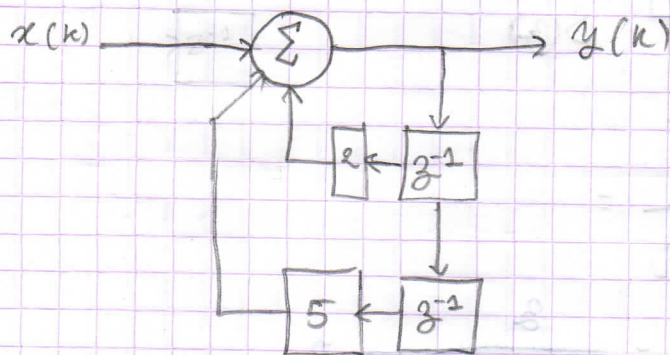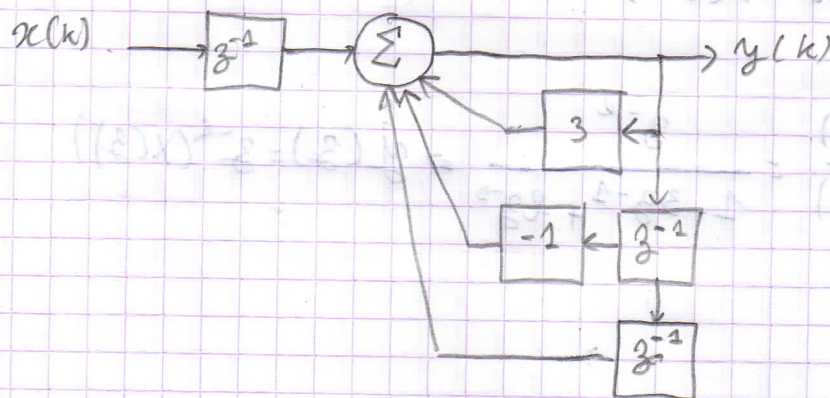$$Y(z) = TZ\left\{\frac{G_1(p) \cdot X(p)}{1 + G_2(p)G_1(p)}\right\}$$

$\dfrac{Y(z)}{X(z)}$ n'existe pas car l'entrée n'est pas echantillonée

TD$_{2.2}$. Ex02 ;

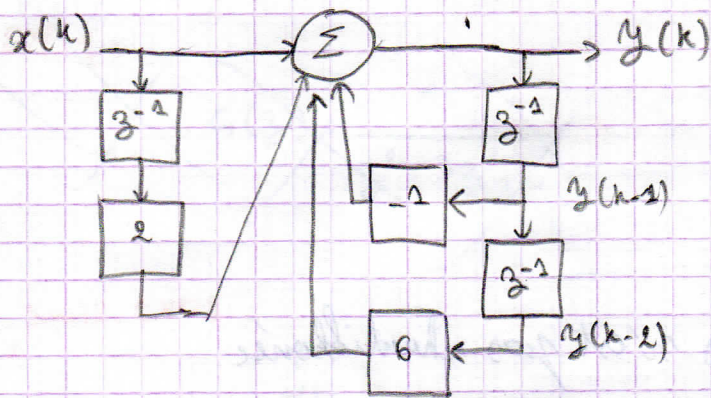$$y(k) = x(k) + 2y(k-1) + 5y(k-2)$$
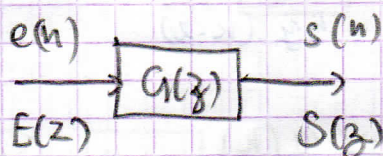

$$Y(k) = x(x-1) + 3y(k) - y(k-1) + y(k-2)$$

La page suivante ⟶

$$y(k) = x(k) + 2x(k-1) - y(k-1) + 6y(k-2)$$

TD3.Ex01 :

$$e(n) = \delta(n) \Rightarrow s(n) = ?$$

on a $G(z) = \dfrac{1}{z^2 - 3z + 2} =$

$$G(z) = \dfrac{1}{z^2 - 3z + 2} = \dfrac{1}{z(z-1)(z-2)} \Rightarrow$$

Décomposition éléments complementaire

$$\Rightarrow \dfrac{G(z)}{z} = \dfrac{1}{z(z-1)(z-2)} = \dfrac{A}{z} + \dfrac{B}{z-1} + \dfrac{C}{z-2}$$

réqurance :

$$G(z) = \dfrac{Y(z)}{X(z)} = \dfrac{z^{-2}}{1 - 3z^{-1} + 2z^{-2}} \Rightarrow Y(z) = z^{-2}(X(z))$$