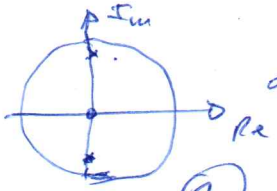
.2 $H(z) = H_1(z)\, H_2(z) = \frac{z}{z-\beta} \times \frac{z^2}{z^2+\alpha^2} = \frac{z^3}{z^3 - \beta z^2 + \alpha^2 z - \alpha^2\beta}$ (2)

Zeros $z_{0_3} = 0$

Pôles $z_1 = \beta$, $z_2 = \pm j\alpha$ ⇒ le filtre est stable

$H(f)$: (2)



$\alpha = \beta = 0,8$

(2) (1)

Ex2 $y(n) = x(n) + a\,x(n-1) + b\,y(n-1)$ ~~$+ c\,y(n-2)$~~

$H(z)$: $Y(z) = X(z) + a z^{-1} X(z) + b z^{-1} Y(z)$

$H(z) = \frac{1 + a z^{-1}}{1 - b z^{-1}}$ ~~$+ c z^{-1}$~~ $\Rightarrow H(z) = \frac{z + a}{z - b}$ (1) $h(n) = b^n u(n) + a b^{n-1} u(n-1)$ (2)

$z_0 = -a$

$z_p = b$ | le filtre est stable pour $|b| < 1$ et a finie (1)