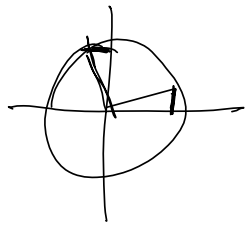
Teste 3
2016/2017



① [a]

② $x[n] = \cos[0] + 2\cos[0{,}05\pi n] + \cos[0{,}09\pi n]$

$\Omega_0 = mdc(0; 0{,}05\pi; 0{,}09\pi) = 0{,}01\pi$

$\Omega_0 = \frac{2\pi}{N} \Rightarrow N = \frac{2\pi}{0{,}01\pi} = 2 \times 100 = 200$ amostras

③ $N = 80$ $\quad m = 3, 7$

$X_{DFT}[3] = -X_{DFT}[-3] = 80j$

$X_{DFT}[7] = X_{DFT}[-7] = -160$

$\Omega_0 = \frac{2\pi}{N} = \frac{2\pi}{80} = \frac{\pi}{40}$

$$x[n] = \sum_{m=0}^{M} C_m \cos(\Omega_0 m n + \theta_m)$$

Substituir

$$= C_3 \cos\left(\frac{3\pi}{40} n + \theta_3\right) + C_7 \cos\left(\frac{7\pi}{40} n + \theta_7\right)$$

$c_3 = \frac{X[3]}{80} = \frac{80j}{80} = j \rightarrow C_3 = 2|c_3| = 2$, $\theta_3 = \pi/2$

$c_7 = \frac{X[7]}{80} = \frac{-160}{80} = -2 \rightarrow C_7 = 2|c_7| = 4$, $\theta_7 = \pi$

④ $T_{total} = 0{,}5\,s$ $\quad N = f_s \cdot T_{total} = 500$ amostras

$f_s = 1000\,Hz$ $\quad f_k = k \cdot \Delta f \Rightarrow f_{24} = 24 \times 2 = 48\,Hz$ //

$\Delta f = \frac{f_s}{N} = \frac{1000}{500} = 2$

⑤ Falso → Para baixo, banda de transição deve ser estreita, zona de passagem plana

⑥ V

⑦ A res. temporal diminui, espectral aumenta?

⑧ $f_s = 1000\,Hz$

$N = t_{janela} \times f_s$

$= 0{,}160 \times 1000$

$= 160$

$Amp = \frac{|DFT|}{N}$

$= \frac{160}{160} = 1$ //