

Treviño Cervantes Andrec Cecilia

Filtro Butterworth

$$f_s = 60.1 \text{ kHz}$$

$$f_p = 3 \text{ kHz}$$

$$f_s = 8.0 \text{ kHz}$$

$$D_p = 30 \text{ dB}$$

$$D_s = 25 \text{ dB}$$

$$\underline{\omega_b} = \frac{3}{30.05} = 0.094$$

$$\underline{\omega_s} = \frac{8}{30.05} = 0.266$$

en matlab

$$[N, \underline{\omega_n}] = \text{buttord}(\underline{\omega_p}, \underline{\omega_s}, R_p, R_s)$$

$$[N, \underline{\omega_n}] = \text{buttord}(0.094, 0.266, 1, 30)$$

$$N=4, \underline{\omega_n} = 0.1179$$

(características)

$$[B, A] = \text{butter}(N, \underline{\omega_n})$$

$$[B, A] = \text{butter}(4, 0.1179)$$

∴ Obtenemos

$$B = 0.0008 \quad 0.0036 \quad 0.0045 \quad 0.0030 \quad 0.0008$$

$$A = 1.0000 \quad -3.0343 \quad 3.5429 \quad -1.8733 \quad 0.3772$$

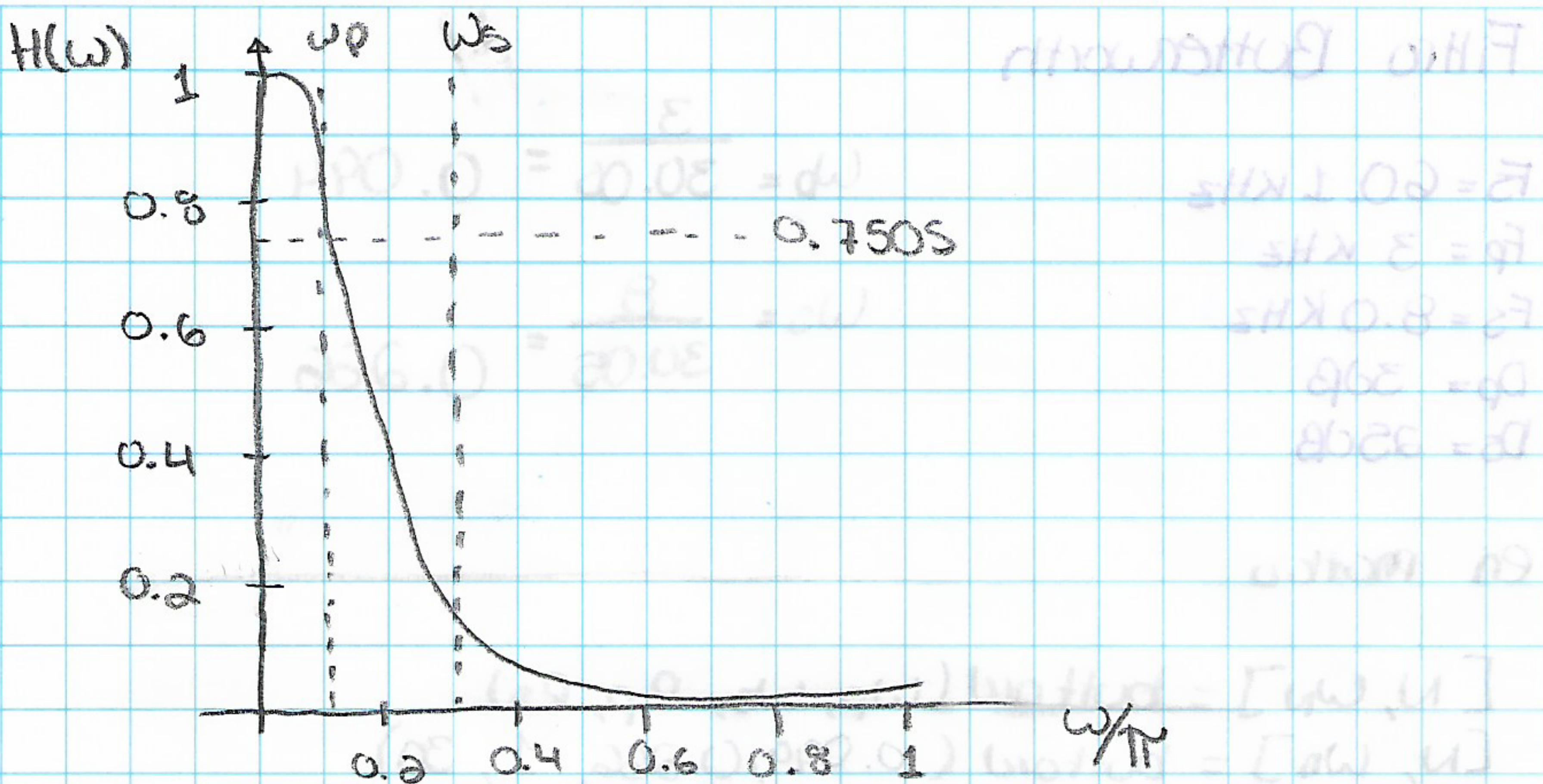
Por lo que:

$$H(z) = \frac{0.0008z^4 + 0.0036z^3 + 0.0045z^2 + 0.0030z + 0.0008}{z^4 - 3.0343z^3 + 3.5429z^2 - 1.8733z + 0.3772}$$

$$\text{con } z = e^{j\omega}$$

Obtenemos →

LEAD-CAPACITOR CIRCUIT



$$8000.0 \quad 0200.0 \quad \text{CHOP} \quad 0000.0 \quad 8000.0 = 0$$

$$6666.0 \quad 6666.1 - 9642.8 \quad 0000.0 - 0000.0 = A$$

$$\frac{6000.0 + 5000.0 + 4000.0 + 3000.0 + 2000.0}{5666.0 + 5866.1 - 5200.0 + 5500.0 - 5000.0} = 0.8$$

$$= \text{constant} \quad \omega_{c2} = 5 \text{ rad/s}$$