

6.

$$G(s) = \frac{1}{s(s+1)}$$

$$M_p = 0,025$$

$$t_s = 1 \text{ seg} \Rightarrow$$

$$t_r = 0,436$$

$$P_1, P_2 = -3,99 \pm 3,4j$$

$$\xi \approx 0,7613$$

$$\omega_n \approx 5,25$$

$$FTMA = \frac{K}{s(s+1)} \Rightarrow FTMF \Rightarrow D(s) = s(s+1) + K = s^2 + s + K$$

$$FTMA \rightarrow FTMF \rightarrow D(s)$$

LGR:

Zeros: none

Poles: 0, -1.

Centroid -0,880

Angles asympt. 90°, 270°

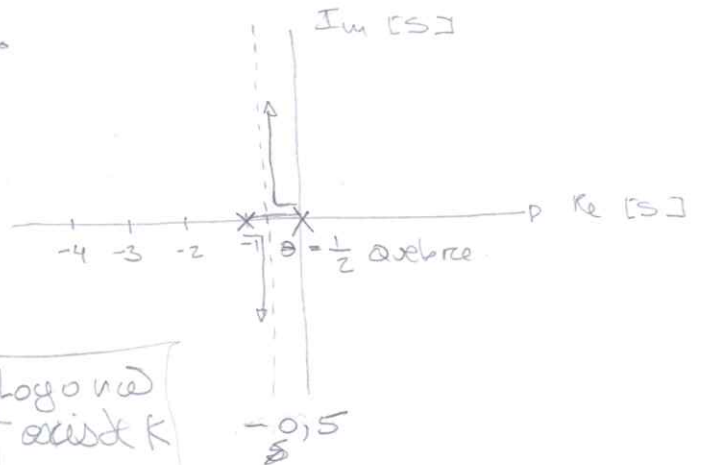
2 branches

2 Asymptotes

$$-1 = FTMA$$

$$\frac{d}{ds} K \neq 0$$

$$D(s) = 0 \mid s = j\omega.$$



$$P_1, P_2 = -3,99 \pm 3,4j \text{ used}$$

Peritence ad

Logal Geométrico

Log on w  
exist K

$$s(s+1) + K = 0$$

$$s^2 + s + K = 0$$

$$K = -(s^2 + s)$$

$$\frac{dK}{ds} = -(2s+1) = 0$$

$$s = -\frac{1}{2}$$

$$s^2 + s + K = 0$$

$$(j\omega)^2 + j\omega + K = 0$$

$$-\omega^2 + j\omega + K = 0$$

$$\text{Im} \begin{cases} \omega \neq 0 \end{cases}$$

$$\text{Re} \begin{cases} -\omega^2 + K = 0 \end{cases}$$

$$\begin{cases} \omega \neq 0 \end{cases}$$

$$\begin{cases} K \neq 0 \end{cases}$$

intercept

at  $\omega = 0$ Res:  $\emptyset$ 

$$P \square > K > 0$$

$$-0,5 > s > 0$$

non oscila

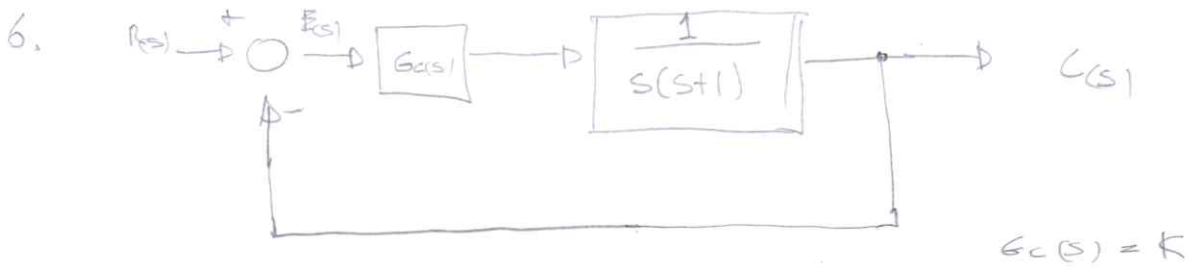
neste

intervalo

$$(0,5)^2 + 0,5 + K = 0$$

$$0,25 - 0,5 + K = 0$$

$$K \geq 0,25$$



$$M_p = 2,5\%$$

$$t_s = 1 \text{ seg}$$

LGR

a)

$$FTMA \approx \frac{K}{s(s+1)}$$

$$\Rightarrow FTMT = \frac{\frac{K}{s(s+1)}}{1 + \frac{K}{s(s+1)} \cdot 1}$$

$$= \frac{K}{s(s+1) + K}$$

$$= \frac{K}{s(s+1) + K}$$

$$\left. \begin{array}{l} M_p = 2,5\% \\ t_s = 1 \text{ seg} \end{array} \right\} \begin{array}{l} - \xi = 0,7632 \\ - \omega_n = 5,25 \text{ rad/seg} \end{array}$$

$$p_1, p_2 = \begin{array}{l} -4 + 3,41j \\ -4 - 3,41j \end{array}$$

$$t_p = 0,922$$

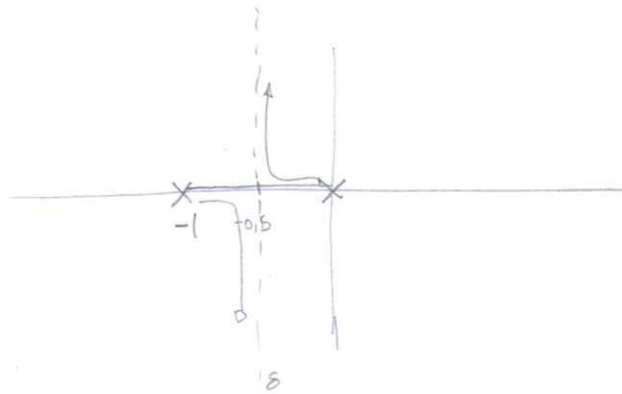
$$Y(t_p) = 1,025$$

$$\omega_d = 3,406$$

$$t_r = 0,435764$$

$$D(s) = s(s+1) + K$$

estabilidad de Root Hurwitz.  
 $\rightarrow \frac{dK}{ds}$   
 $\rightarrow p(s) = 0 \mid s = j\omega$



$p_1, p_2$  no pertenecen a la LGR

no es válido para  $-0,5 > s > 0$