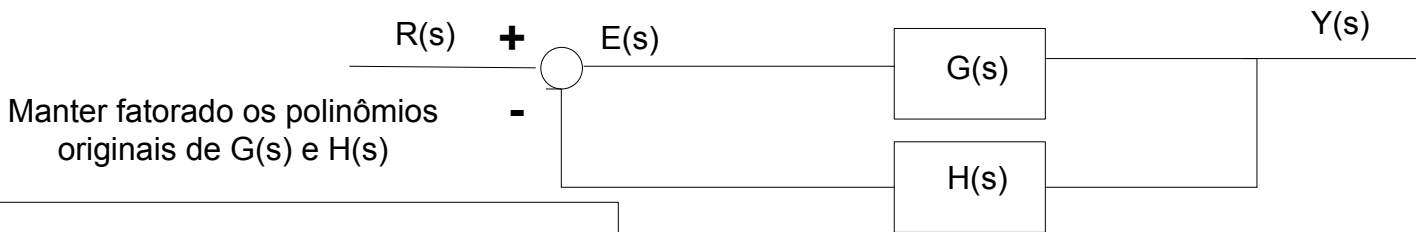


Lugar das Raízes para Funções G(s)*H(s) mais comuns



$$G(s)*H(s) = \frac{K * (s+a_1) * (s+a_h) * (s+a_w)}{s^m * (s+b_1) * (s+b_2) * (s+b_c) * (s+b_u)}$$

$$G(s) = \frac{N1(s)}{D1(s)}$$

$$H(s) = \frac{N2(s)}{D2(s)}$$

$$G(s)*H(s) = \frac{N1(s)*N2(s)}{D1(s)*D2(s)}$$

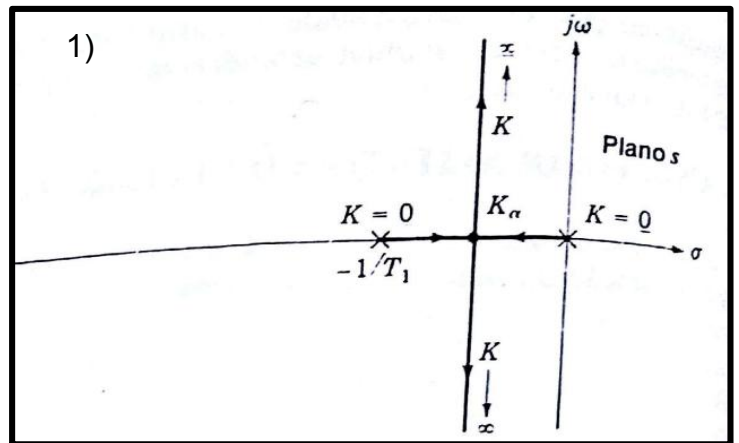
Função Transfência de Malha Fechada

$$\frac{Y(s)}{R(s)} = \frac{G(s)}{1 + G(s)*H(s)} = \frac{N1(s)*D2(s)}{D1(s)*D2(s) + N1(s)*N2(s)}$$

1)

$$G(s) = \frac{K}{s*(s + 1/T_1)}$$

$$H(s) = 1$$



2)

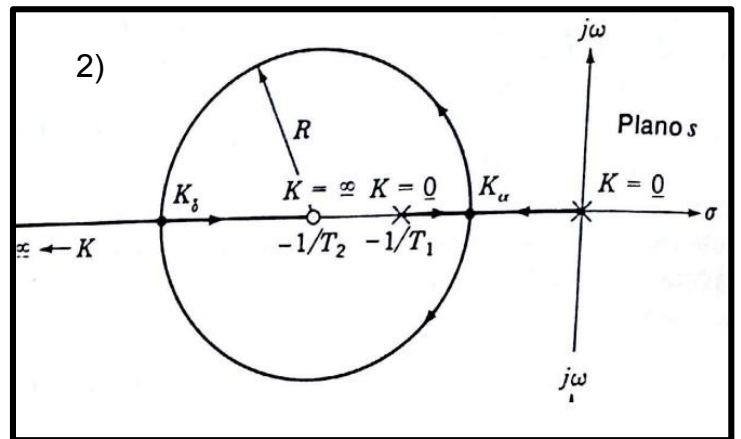
$$G(s) = \frac{K(s+1/T_2)}{s*(s + 1/T_1)}$$

$$H(s) = 1$$

A parte do lugar das raízes fora do Eixo real é um círculo centrado no zero $z = -1/T_2$ E com raio R:

$$R = \sqrt{|Z - p_0| * |Z - p_1|}$$

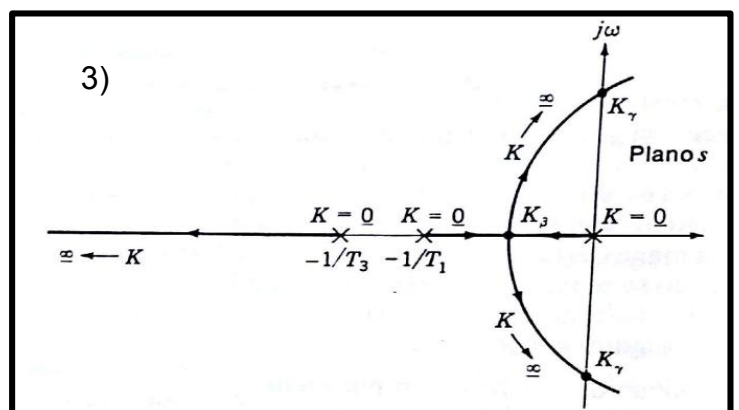
$$R = \sqrt{\frac{1}{T_2} * \left(\frac{1}{T_2} - \frac{1}{T_1} \right)}$$



3)

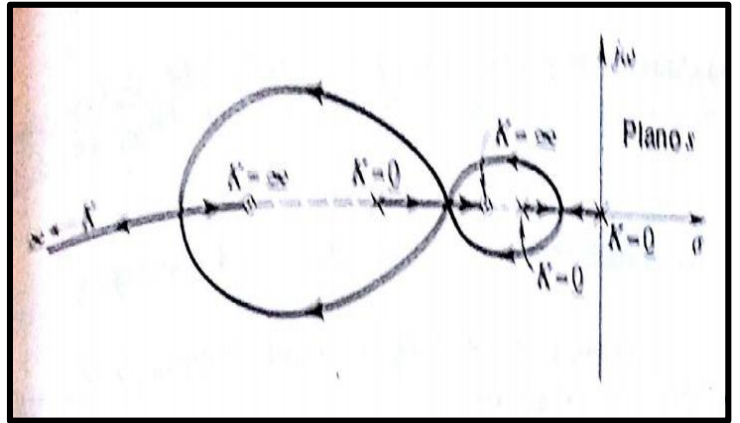
$$G(s) = \frac{K}{s*(s + 1/T_1)*(s + 1/T_3)}$$

$$H(s) = 1$$



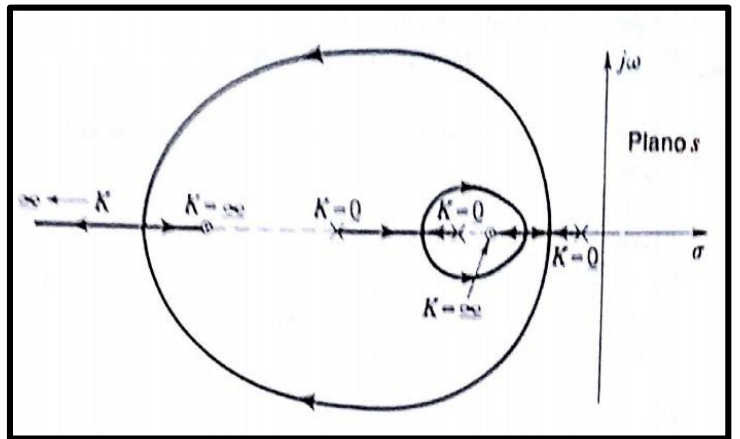
4)

$$G(s)H(s) = \frac{K(s + 1/T_2) * (s + 1/T_4)}{s * (s + 1/T_1) * (s + 1/T_3)}$$



5)

$$G(s)H(s) = \frac{K(s + 1/T_2) * (s + 1/T_4) * (s + 1/T_6)}{s * (s + 1/T_1) * (s + 1/T_3) * (s + 1/T_5)}$$



6)

$$G(s)H(s) = \frac{K(s + 1/T_2)}{s * (s - 1/T) * (s^2 + 2 * \xi * \omega_n * s + \omega_n^2)}$$

