Sistema de segundo orden

Función de transferencia

$$G_0 = \frac{3}{s^2 + 2s + 1}$$

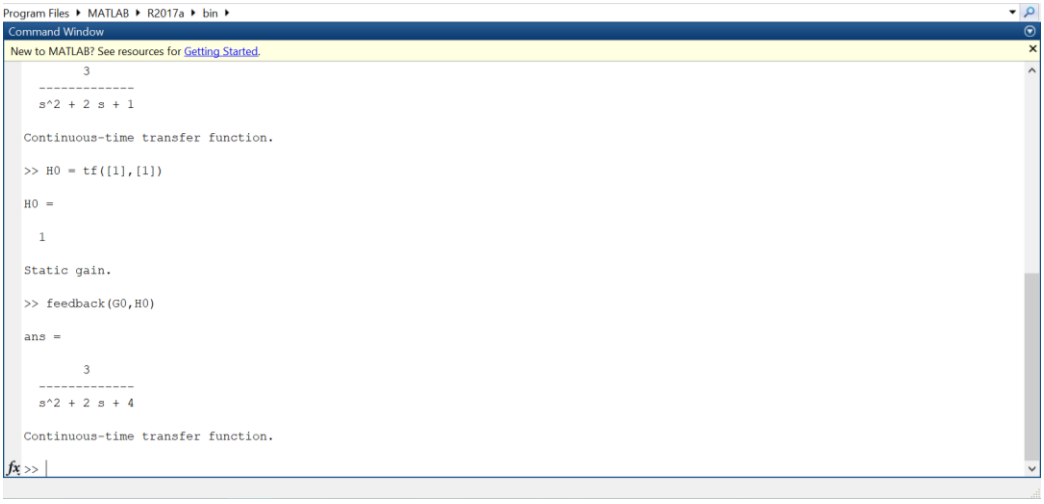
- Feedback

$$G_R = \frac{G_0(s)}{1 + G_0(s)}$$

$$G_0(s) = \frac{\frac{3}{s^2 + 2s + 1}}{1 + \frac{3}{s^2 + 2s + 1}}$$

$$G_0(s) = \frac{\frac{3}{s^2 + 2s + 1}}{\frac{s^2 + 2s + 1 + 3}{s^2 + 2s + 1}}$$

$$G_0(s) = \frac{3}{s^2 + 2s + 4}$$



- Como obtener ζ y W_n

$$\frac{{W_n}^2}{S^2 + 2\zeta W_n S + {W_n}^2} \leftrightarrow \frac{3}{S^2 + 2S + 4}$$

$$S^2 = S^2$$

$${W_n}^2 = 4$$

$$2\zeta W_n S = 2S$$

$$\zeta W_n = 1$$

$$\zeta = \frac{1}{2}$$

$$W_n = 2$$

- Como obtener z y p

Parte real

$$\alpha = \zeta \times W_n = \frac{1}{2} \times 2 = 1$$

Parte imaginaria

$$\omega = W_n \times \sqrt{1 - \zeta^2} = 2 \times \sqrt{1 - \frac{1^2}{2}} = \sqrt{3} \approx 1,732$$

$$S = -\alpha \pm \omega = -1 \pm \sqrt{3}$$

- Tf2zp


Program Files ▸ MATLAB ▸ R2017a ▸ bin ▸
Command Window
New to MATLAB? See resources for Getting Started.
3
----
s^2 + 2 s + 4
Continuous-time transfer function.
>> [z, p, k]= tf2zp ([3], [1 2 4])
z =
0×1 empty double column vector
p =
-1.0000 + 1.7321i
-1.0000 - 1.7321i
k =
3
>>