



Control Automático
EM-720

Tarea #4

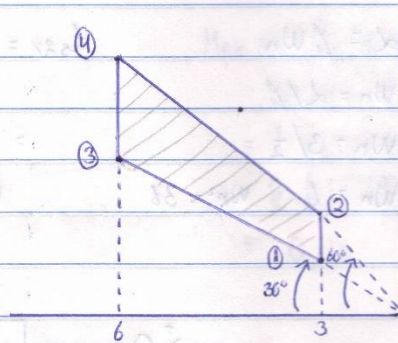
Profesor:
Erick Salas Chaverri

Estudiante:
Paulo Corrales Soto
(Ing. Electromecánica)

Martes Noche
(6pm - 9pm)

Segundo Cuatrimestre 2018

② of


$$\left[\begin{array}{c} \gamma_1^{(n)} \\ \vdots \\ \gamma_n^{(n)} \end{array} \right] =$$

$$M_p = \frac{-\left(\frac{q \pi}{\sqrt{1 - q^2}}\right)}{e}$$

$$M_{p_1} = - \frac{\left(\frac{\sqrt{3}}{2} \right) \pi}{e \sqrt{1 - \left(\frac{\sqrt{3}}{2} \right)^2}}$$

$$M_{p1} = 0,0043$$

$$x \mid \sigma^2 = 9$$

Block diagram of a closed-loop system. The reference input $R(s)$ enters a summing junction. The output $Y(s)$ is fed back to the same summing junction with a negative sign. The output of the summing junction enters a forward path block with transfer function $\frac{12}{s^2 + 6s + 12}$. The output of this block is $Y(s)$.

N = 124

$$\frac{5}{2} = 2.5$$

Punto ②

$$\zeta = \cos(60)$$

$$\zeta = 1/2$$

$$\alpha = \zeta \omega_n$$

$$\omega_n = \alpha / \zeta$$

$$\omega_n = 3 / \frac{1}{2}$$

$$\omega_n = 6 \quad \omega_n^2 = 36$$

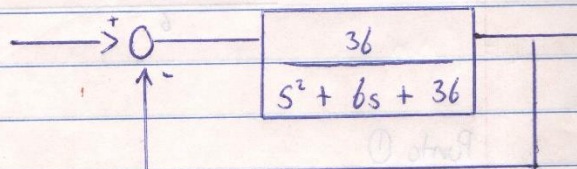
$$t_{s2\%} = \frac{4}{\zeta \omega_n}$$

$$= \frac{4}{(1/2)(6)} = 4/3$$

$$M_p = - \left(\frac{\zeta \omega_n \pi}{e \sqrt{1 - \zeta^2}} \right)$$

$$= - \left[\frac{(1/2) \pi}{e \sqrt{1 - (1/2)^2}} \right]$$

$$= 0,16$$



Punto ③

$$\zeta = \cos(30)$$

$$\zeta = \sqrt{3}/2$$

$$M_p = - \left(\frac{\zeta \pi}{e \sqrt{1 - \zeta^2}} \right)$$

$$= - \left[\frac{(\sqrt{3}/2) \pi}{e \sqrt{1 - (\sqrt{3}/2)^2}} \right]$$

$$= 0,0043$$

$$\alpha = \zeta \omega_n$$

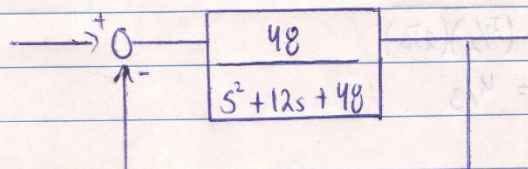
$$\omega_n = \alpha / \zeta$$

$$\omega_n = 6 / \frac{\sqrt{3}}{2}$$

$$\omega_n = 4\sqrt{3} \quad \omega_n^2 = 48$$

$$t_{s2\%} = \frac{4}{(\sqrt{3}/2)(4\sqrt{3})}$$

$$t_{s2\%} = \frac{2}{3}$$



Punto ④

$$\zeta = \cos(60)$$

$$\zeta = 1/2$$

$$\alpha = \zeta \omega_n$$

$$\omega_n = \alpha / \zeta$$

$$\omega_n = 6 / 1/2$$

$$\omega_n = 12 \quad \omega_n^2 = 144$$

$$M_{pu} = - \left(\frac{\zeta \omega_n \pi}{\sqrt{1 - \zeta^2}} \right)$$

$$= - \left[\frac{(1/2) \pi}{\sqrt{1 - (1/2)^2}} \right]$$

$$= 0,16$$

$$t_{s2\%} = \frac{4}{\zeta \omega_n}$$

$$= \frac{4}{(1/2)(12)}$$

$$= 2/3$$

