

3. A, b, c, d ngított rendszer karakterisztikus egyenlete

$$\boxed{|sI - A| = 0}$$

$$\dot{x} = Ax + bu$$

$$y = c^T x + du$$

$$sX = AX + BU$$

$$Y = c^T X + dU$$

$$(sI - A)x = bu$$

$$X = (sI - A)^{-1} bu$$

$$M^{-1} = \frac{\text{adj}(M)}{\det(M)}$$

$$\frac{Y}{U(s)} = c^T (sI - A)^{-1} bu + du$$

$$u = -k^T x$$

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$$\dot{x} = Ax + bu$$

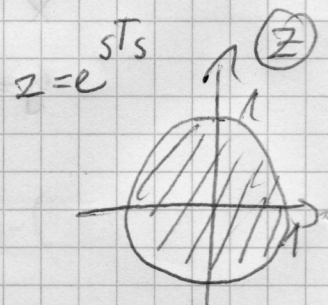
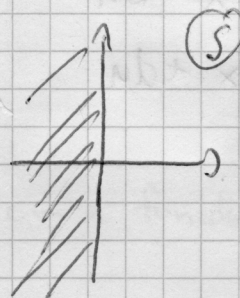
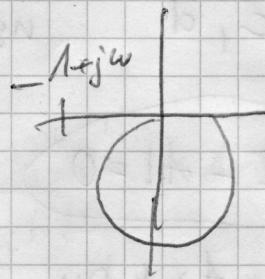
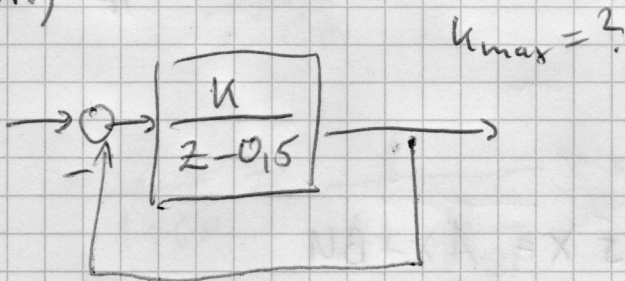
$$= Ax + b k^T x =$$

$$= (A - b k^T) x$$

$$[sI - A - b k^T]$$

$$A \rightarrow A - b k^T$$

h.)



$$\frac{\frac{k}{z-0.5}}{1 + \frac{k}{z-0.5}} = \frac{k(z-0.5)}{z-0.5+k}$$

$$k_{\max} = 1.5$$

-0.5... 1.5 is terjed a k
a konstans ~~is~~ állandó
értékére 1-vel átszabva =
hallhatsz

5.)

$$C(z) = \frac{5(z-0.8)}{z} \rightarrow \text{PD szabályozó}$$

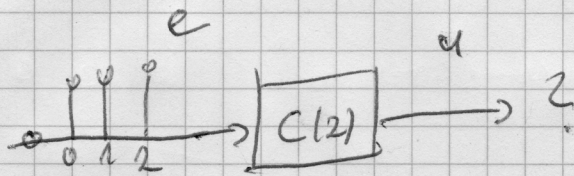
Milyen típusú direkt szabályozó

az a két oldal van

$$\text{PD} \quad \frac{z-z_1}{z}$$

$$z = e^{sT_s}$$

$$\text{PI} \quad \frac{z-z_1}{z-1}$$



$$\frac{5z - 4}{z} = \frac{z \{u_z\}}{z \{e_z\}}$$

$$5 - 4z^{-1} = \frac{u_z}{e_z}$$

$$(5 - 4z^{-1}) e^k = u_k$$

$$u_k = 5e^k - 4e[k-1]$$

$$u[0] = 5$$

$$u[1] = 1$$

$$u[2] = 1$$

1