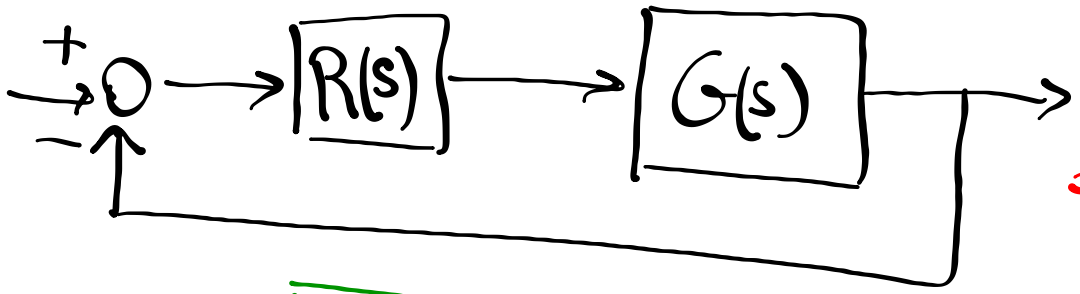
Metodo indiretto

☺ progetto più semplice

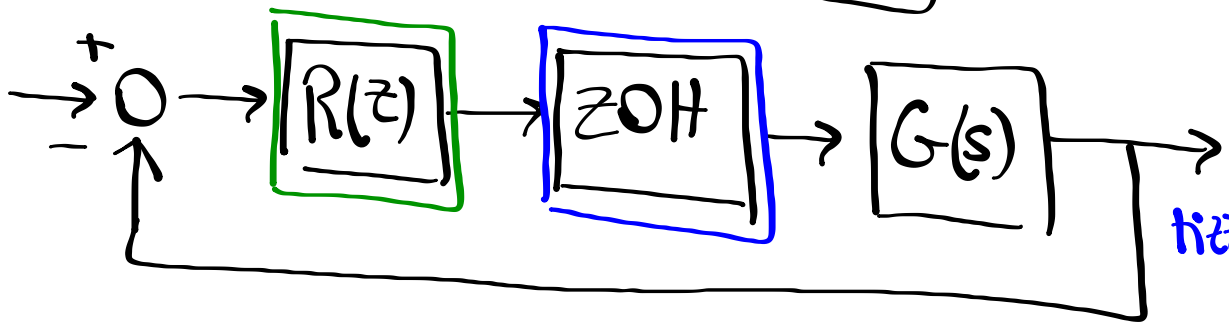
☹ non considero ZOH a priori

1)



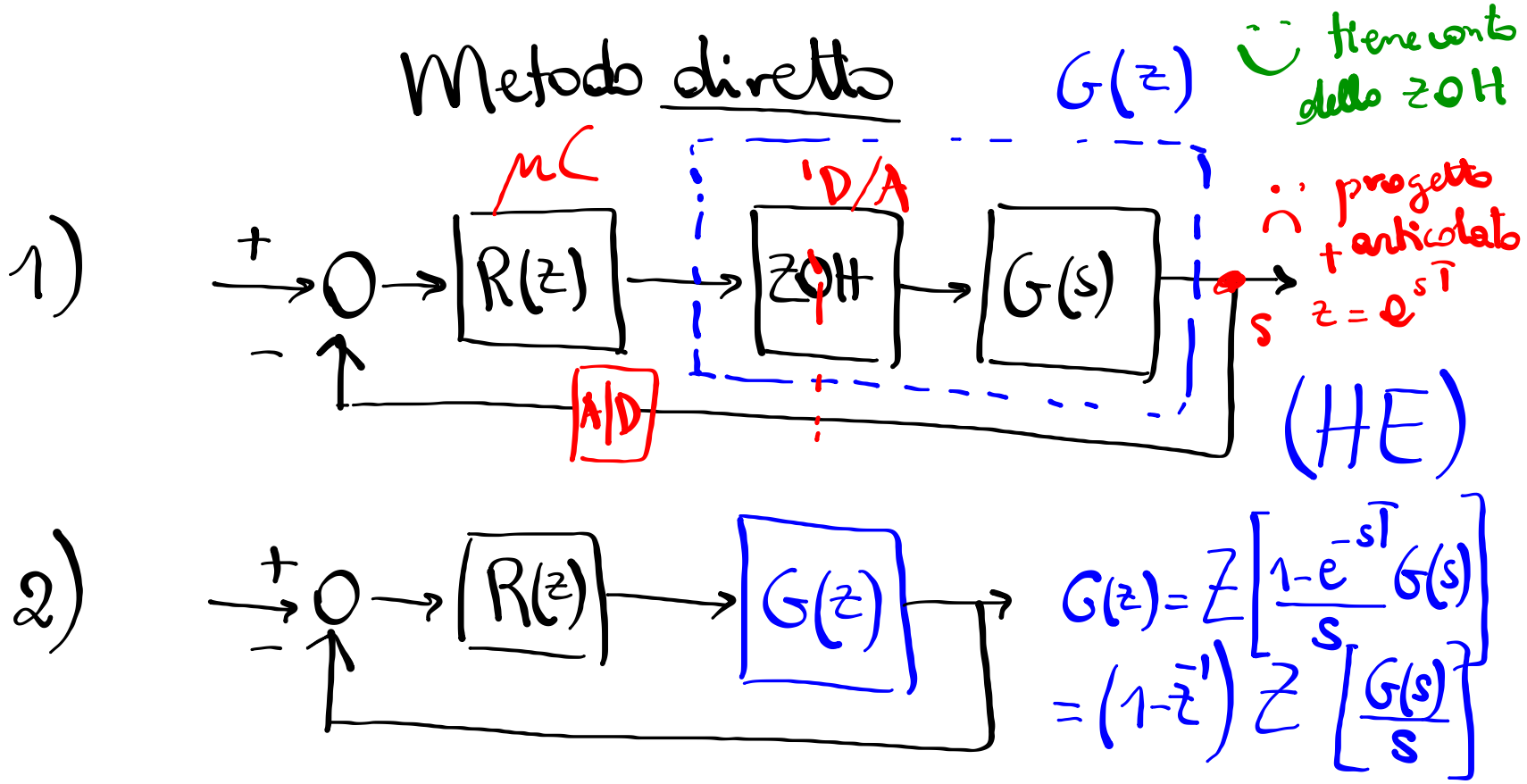
⇒ $R(s)$

2)



$R(z)$ per discretizzazione

Metodo diretto



$$G(s) = \frac{0.2}{(1+s)(1+0.2s)}$$ Metodo diretto

⇒ Progettare $R(z)$

$$R(z) = K\frac{z-z_0}{z-z_p}$$

- errore a regime nullo
- $T_a \leq 2.5s$
- $S\% \leq 5\%$ $(\delta \geq 0.69)$

$T = 0.1s$

$$G(z) = \frac{z + 0.8189}{(z - 0.9048)(z - 0.6065)}$$

Non sono sistemi di tipo 1

$$G(s) = \frac{0.2}{(1+s)(1+0.2s)}$$

$$R(z) = K\frac{z - z_0}{z - z_p} = K\frac{z - z_0}{z - 1}$$

1) $e_r = 0$ $\quad R(z) \cdot G(z)$

$z_p = 1$

z_0 tale da cancellare il polo "più lento" di $G(z)$

$$G(z) = \frac{z + 0.8189}{(z - 0.9048)(z - 0.6065)}$$

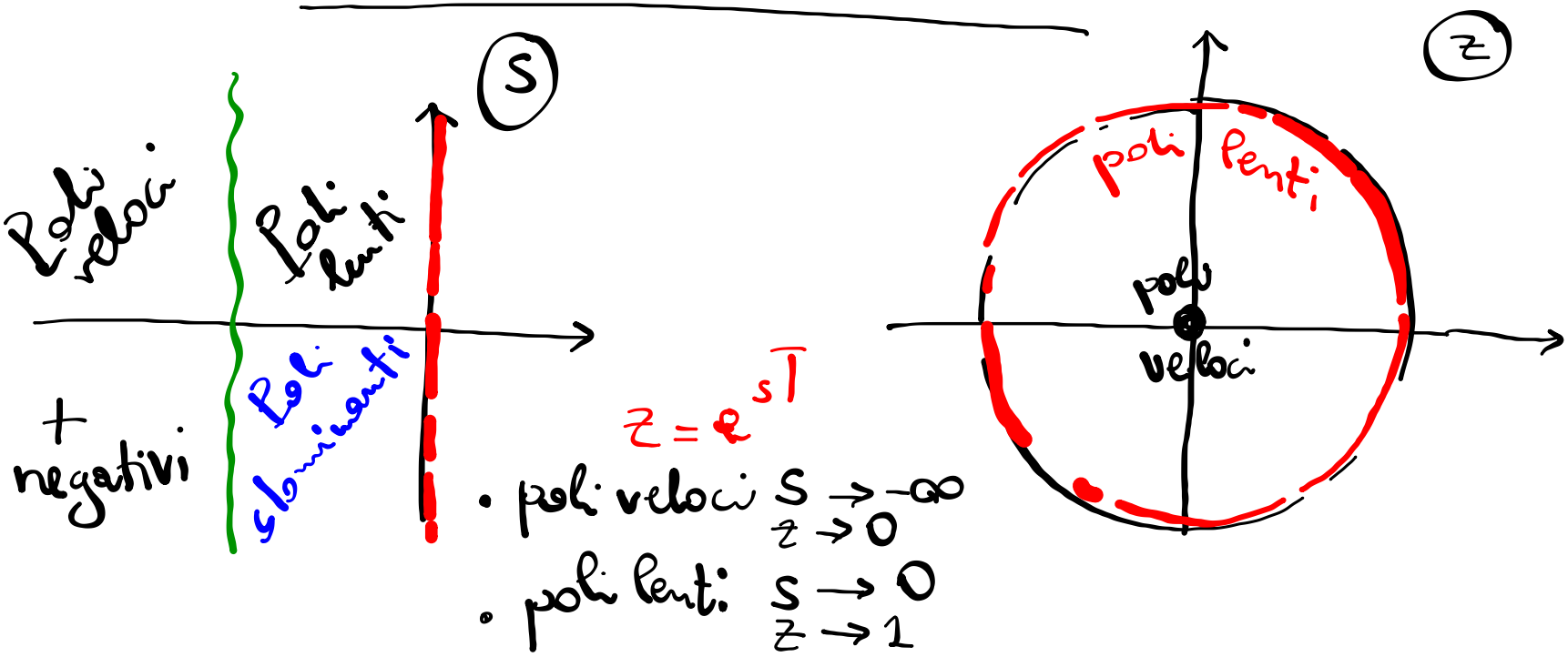
$$R(z) = K \frac{z - 0.9048}{z - 1}$$

1) 2

1) è il polo lento

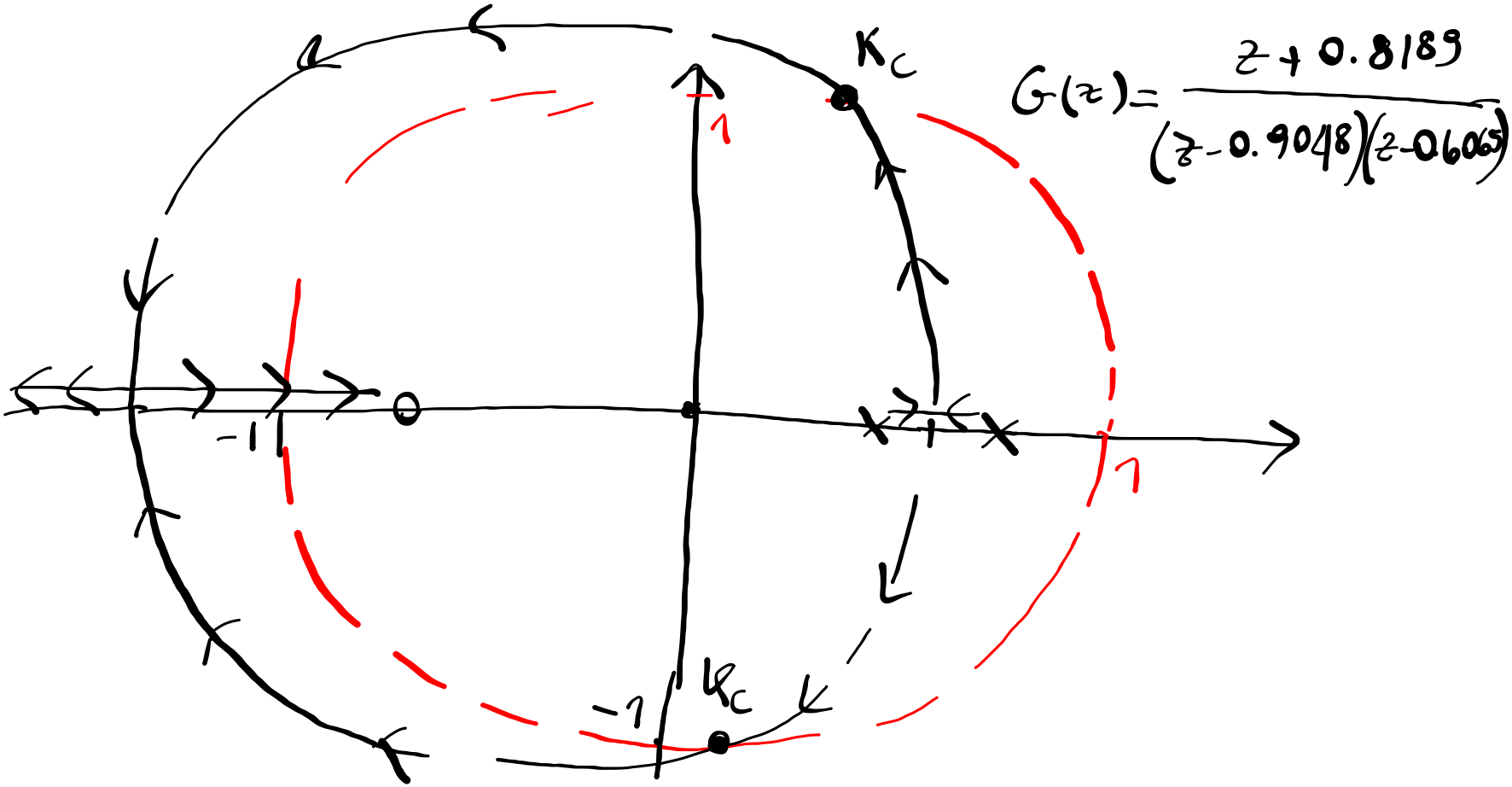
2) è il polo veloce

Poli lenti e veloci



$z = e^{sT}$

- poli veloci $s \to -\infty$ $z \to 0$
- poli lenti: $s \to 0$ $z \to 1$


K_C
$G(z) = \frac{z + 0.8189}{(z - 0.9048)(z - 0.6065)}$
1
-1
0
1
1
-1
K_C

$$R(z) = \frac{K}{(z-1)}$$

specifiche S% e T_q

PI

errore q regime = 0