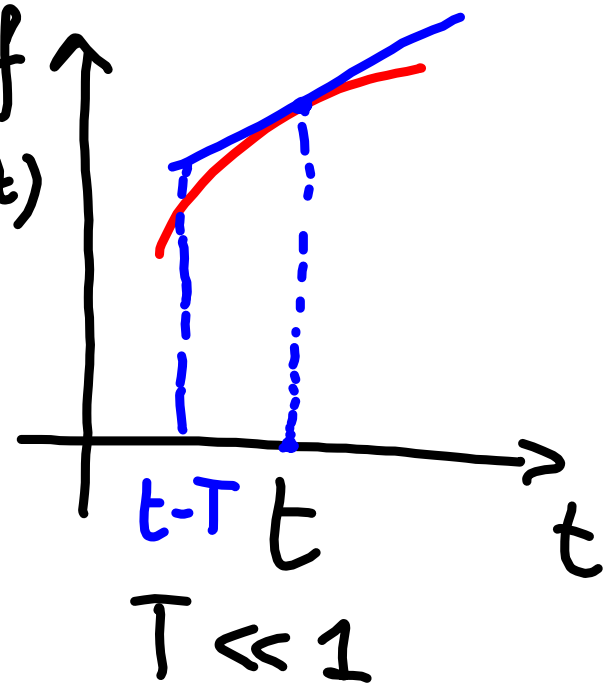
$$S = \frac{z^{-1} - 1}{T}$$

$$f'(t) = \lim_{T \to 0} \frac{f(t-T) - f(t)}{T}$$

$$f'(t) \simeq \frac{f(t-T) - f(t)}{T}$$

$$S f(t) \simeq \frac{z^{-1} f(t) - f(t)}{T}$$



$T \ll 1$

$$z = e^{sT} = \frac{1}{e^{-sT}} \qquad sT \ll 1$$

$$z \simeq \frac{1}{1 - sT}$$

$$1 - sT = z^{-1}$$

$$s = \frac{1 - z^{-1}}{T}$$

i) calcolo numerico di una eq. diff.

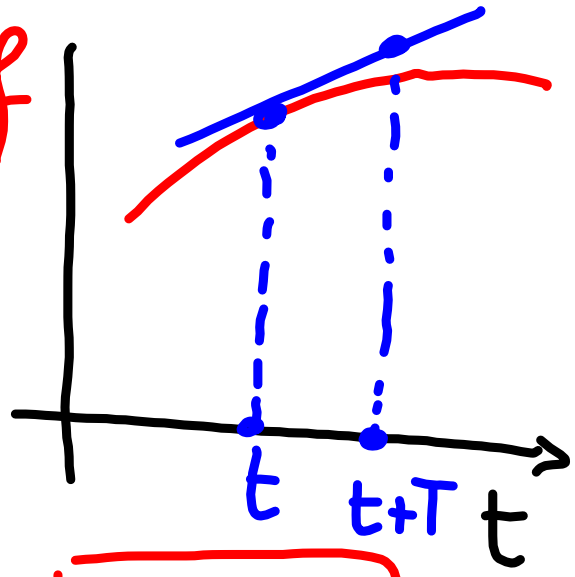
ii) approssimazione di derivata di funzione

iii) approssimazione della relazione $z = e^{sT}$

$$f'(t) = \lim_{T \to 0} \frac{f(t+T) - f(t)}{T}$$

$$\simeq \frac{f(t+T) - f(t)}{T}$$

$$S\, f(t) \simeq z\, \frac{f(t) - f(t)}{T}$$



$$S = \frac{z-1}{T}$$

$$z = e^{sT}$$

$$z = \simeq 1 + sT$$

$$s = \frac{z-1}{T}$$

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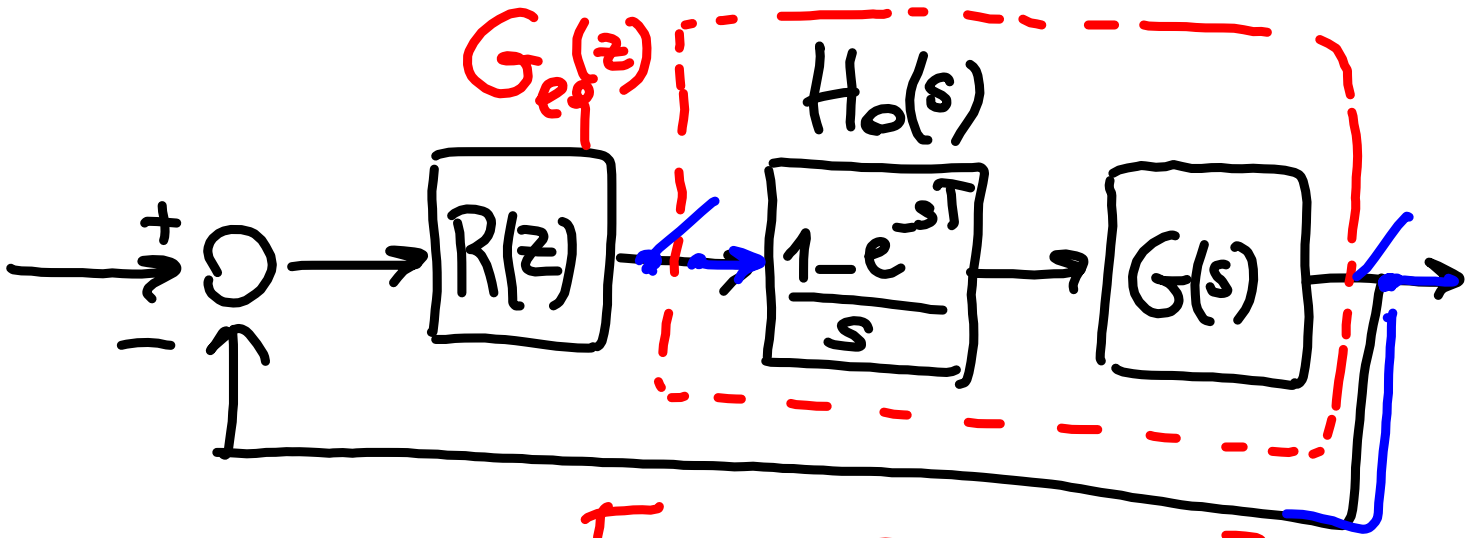
$$s = \frac{2}{T}\,\frac{z-1}{z+1}$$

$$z = e^{sT} = \frac{e^{sT/2}}{e^{-sT/2}} =$$

$$z \cong \frac{1 + sT/2}{1 - sT/2}$$

$$s = \frac{2}{T}\frac{z-1}{z+1}$$



$$G_{eq}(z) = \mathcal{Z}\left[\frac{1-e^{-sT}}{s} \cdot G(s)\right]$$

HE

$$G_{eq}(z) = \mathcal{Z}\left[\frac{1-e^{-sT}}{s}\,G(s)\right] =$$

Hold Equivalence

$$= (1-z^{-1})\,\mathcal{Z}\left[\frac{G(s)}{s}\right]$$

$$= (1-z^{-1})\,\mathcal{Z}\left\{\mathcal{L}^{-1}\left[\frac{1}{s}G(s)\right]\Big|_{t=kT}\right\}$$