Tema curs 7

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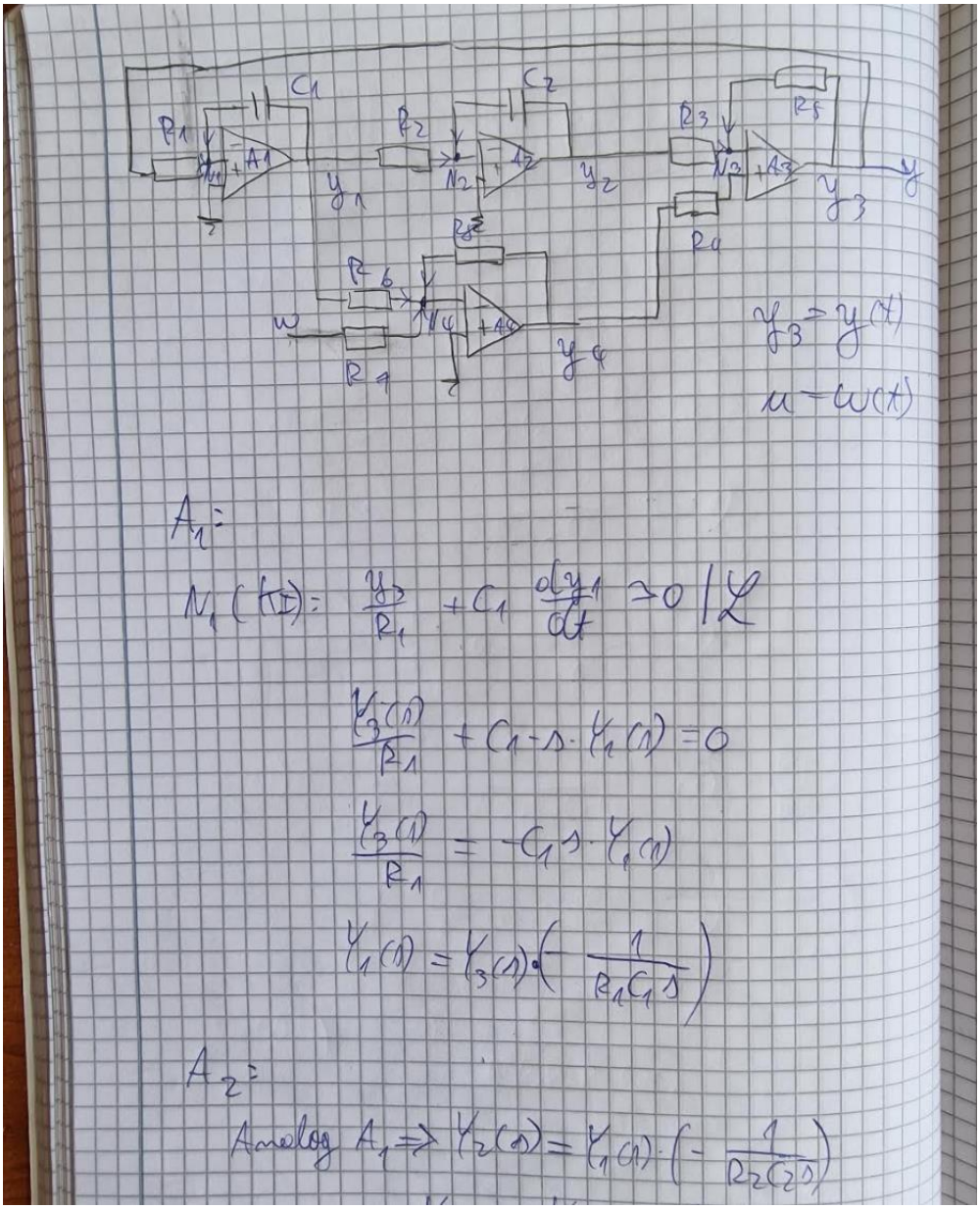
Grup 30121

Determinarea functiei de transfer echivalente folosind tipurile de conexiuni ale sistemelor:



A_3:

$U_3(t) = \frac{y_2}{R_3} + \frac{y_3}{R_5} = 0$

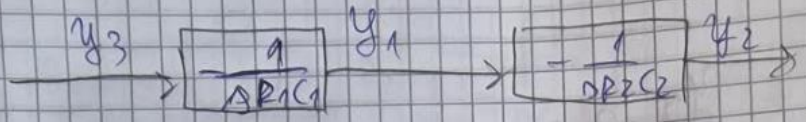
$y_3 = -\frac{R_5}{R_3} y_2$

A_3 numotor $\Rightarrow y_3 = -\left(\frac{R_5}{R_3} y_2 + \frac{R_5}{R_4} y_4\right)$

A_4:

$\frac{y_1}{R_1} U_4(t) = \frac{\omega}{R_7} + \frac{y_1}{R_6} + \frac{y_4}{R_8} = 0$

$y_4 = -\frac{R_8}{R_7}\omega - \frac{R_8}{R_6} y_1$



$$y_{02}(s) = -\frac{1}{sR_2C_2} y_1(s)$$

$$y_2(s) = -\frac{1}{sR_2C_2} \cdot \left(-\frac{1}{sR_1C_1}\right) y_3(s)$$

$$y_2(s) = \frac{1}{s^2 R_1 R_2 C_1 C_2} y_3(s)$$

$$y_6(s) = -\frac{R_8}{R_7} w + \frac{R_8}{R_6} \cdot y_3(s) \cdot \frac{1}{R_4 C_1 s}$$

$$y_3(s) = -\frac{R_5}{R_3} \cdot \frac{1}{s^2 R_1 R_2 C_1 C_2} y_3(s) - \frac{R_5}{R_4} \cdot \left(-\frac{R_8}{R_7} w + \frac{R_8}{R_6} y_3(s) \cdot \frac{1}{R_4 C_1 s} \right)$$

$$y_3(s) + y_3(s) \cdot \frac{R_5}{s^2 R_1 R_2 R_3 C_1 C_2} + \frac{R_5 R_8}{s R_4 R_6 R_7 C_1} = \frac{R_5 R_8}{R_4 R_7} w$$

$$y_3(s)\left(1+\frac{R_5}{s^2R_1R_2R_3C_1C_2}+\frac{R_5R_8}{sR_1R_4R_6C_1}\right)=\frac{R_5R_8}{R_6R_7}\omega$$

$$y_3(s)\left(\frac{s^2R_1R_2R_3R_4R_6R_7+R_4R_5R_7C_2+R_2R_3R_4R_7R_8C_2}{s^2R_1R_2R_3R_4R_6R_7C_1C_2}\right)$$

$$=\frac{s^2R_1R_2R_3R_5R_6R_7R_8C_1C_2}{s^2R_1R_2R_3R_4R_6R_7C_1C_2}\omega$$

$$\frac{y_3(s)}{u(s)}=\frac{s^2R_1R_2R_3R_5R_6R_7R_8C_1C_2}{s^2R_1R_2R_3R_4R_6R_7+R_4R_5R_7+R_2R_3R_5R_7R_8C_2}$$

~~$\frac{y(s)}{u(s)}=\frac{}{R_1R_2R_3R_4R_6(s^2}$~~

$$H(s)=\frac{C_1C_2s^2}{s^2+\frac{R_4R_5+R_2R_3R_5}{R_1R_2R_3R_4R_5R_6}}$$