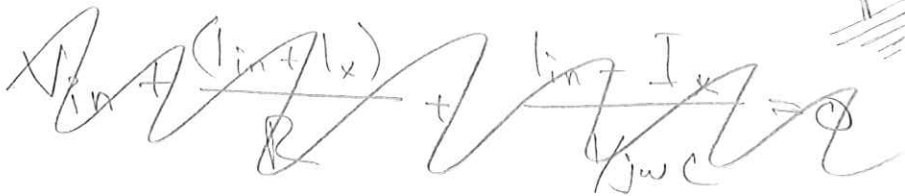
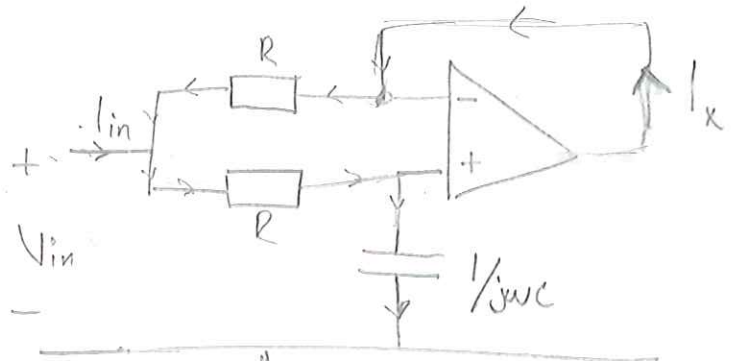


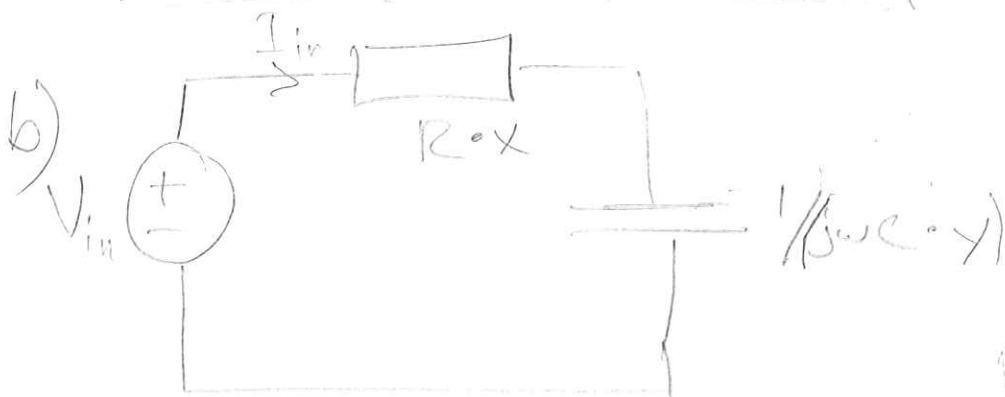
KAPITEL 18

18.2 Bestäm V_{in}/I_{in}



$$V_{in} - R \cdot I/2 - \frac{1}{j\omega C} \cdot I/2 = 0$$

$$\Rightarrow \frac{V_{in}}{I_{in}} = \frac{R}{2} + \frac{1}{j\omega 2C}$$



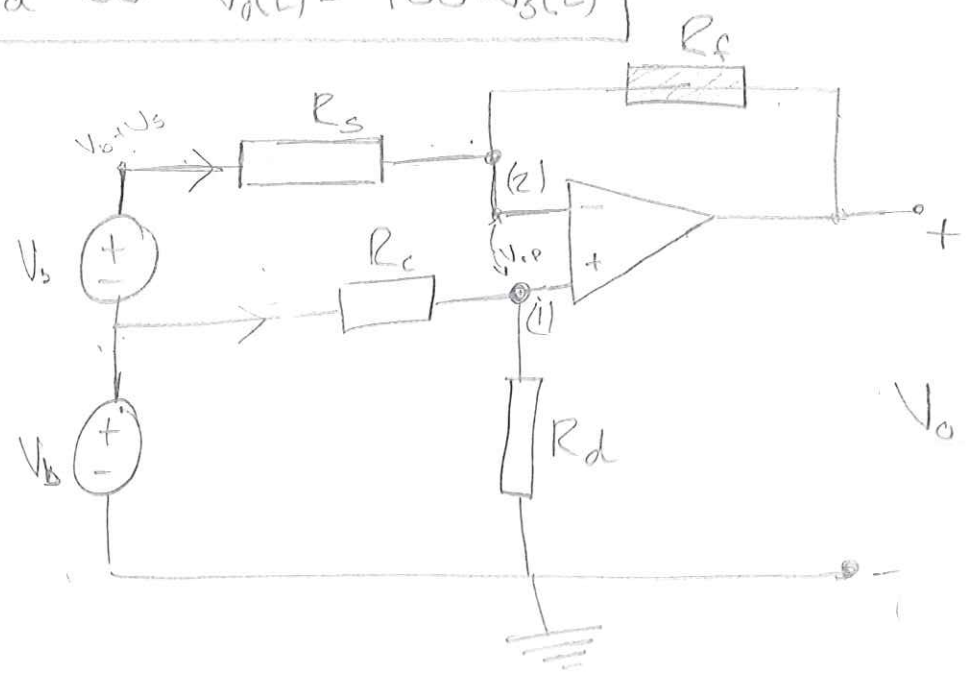
$$V_{in} - I_{in} \cdot R_x - I_{in} \cdot \frac{1}{j\omega C \cdot 2}$$

$$\Rightarrow \begin{cases} x = \frac{1}{2} \\ y = 2 \end{cases}$$



8.6 Bestäm R_c/R_d så $V_o(t) = -100 \cdot V_s(t)$

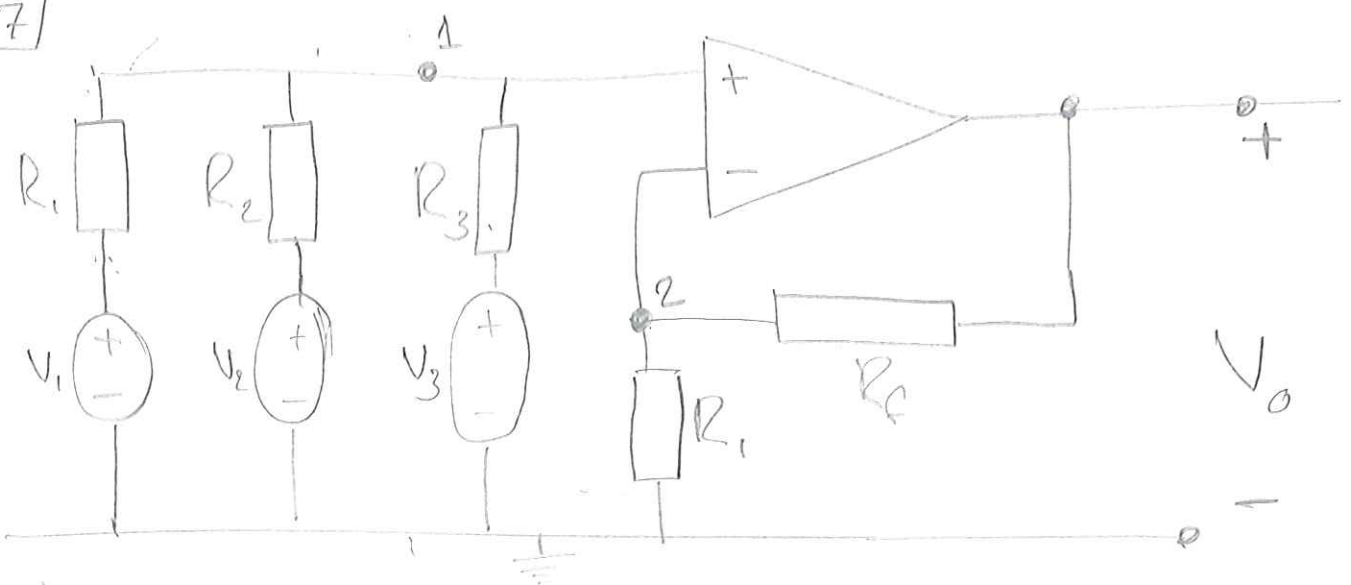
$V_i = V_s + V_b$



$$\left\{ \begin{aligned} \frac{V_{op} - V_b}{R_c} + \frac{V_{op} - 0}{R_d} &= 0 & (1) \\ \frac{V_{op} - (V_b + V_s)}{R_s} + \frac{V_{op} - V_o}{R_f} &= 0 & (2) \end{aligned} \right.$$

$\Rightarrow R$ Lös detta om du har tid.

18.7



Bestäm R_2/R_1 , R_3/R_1 , R_f/R_1
 $V_o = 10V_1 + 20V_2 + 40V_3$

Spänningsdelning över R_1 :

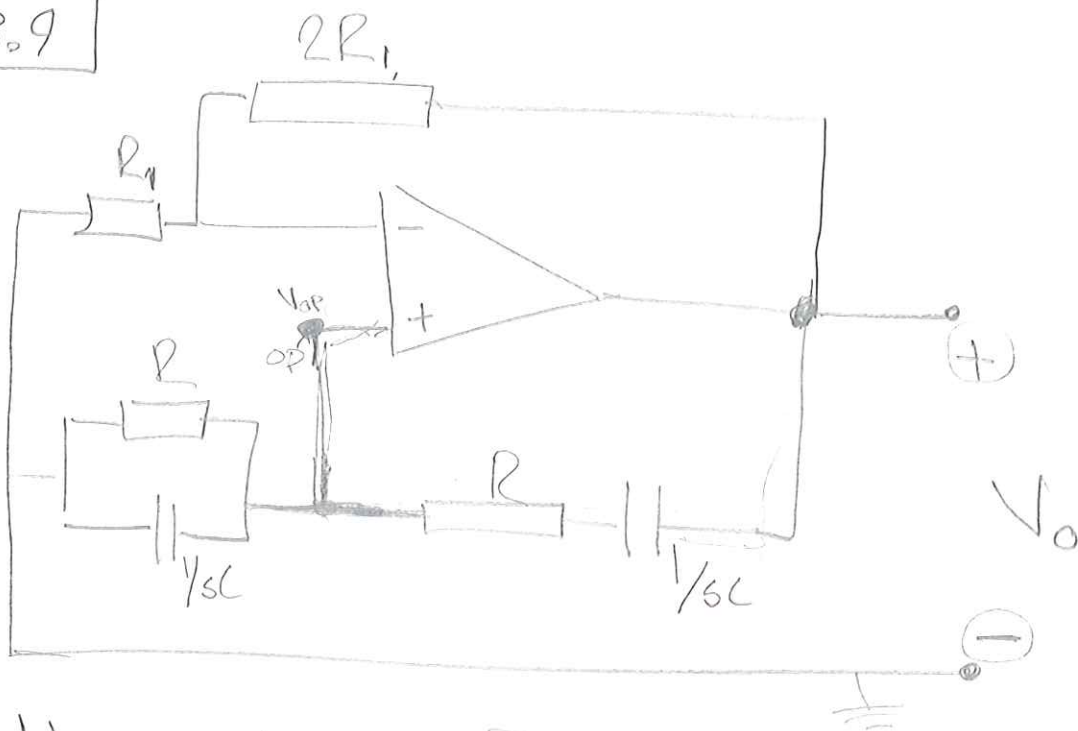
$$V_{op} = \frac{R_1}{R_1 + R_f} \cdot V_o$$

Nodanalys i punkt 1:

$$\frac{V_{op} - V_1}{R_1} + \frac{V_{op} - V_2}{R_2} + \frac{V_{op} - V_3}{R_3} = 0$$

R

8.9



Nodanalys på op_i :

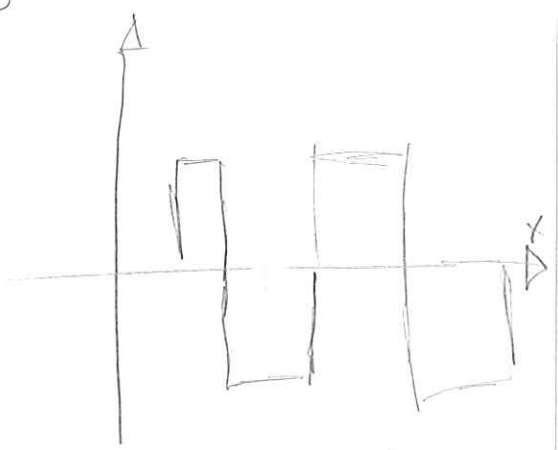
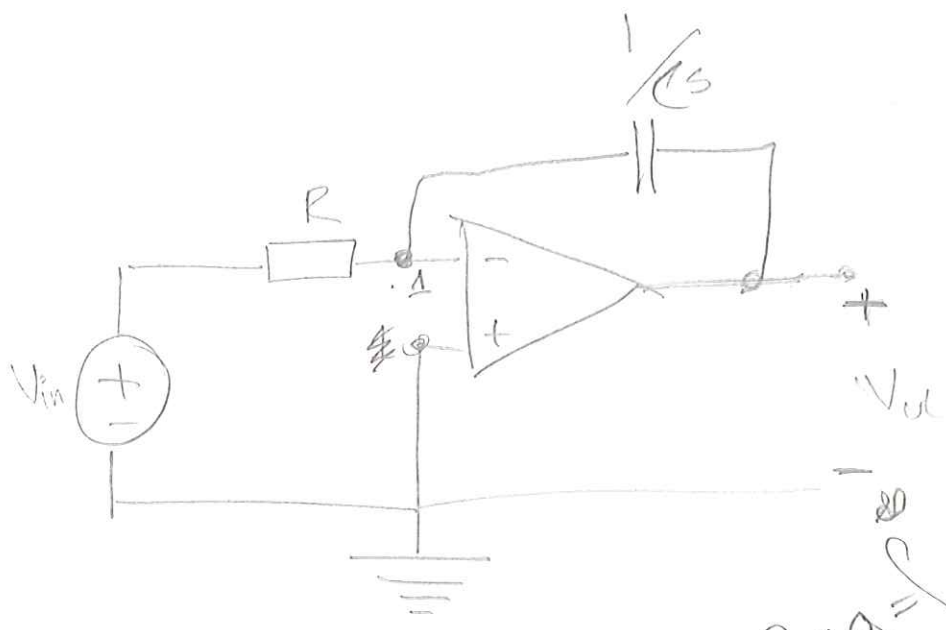
$$\frac{V_{op} - 0}{R \parallel \frac{1}{sC}} + \frac{V_{op} - V_o}{R + \frac{1}{sC}} = 0$$

~~$$\frac{V_{op} - 0}{R} + \frac{V_{op} - V_o}{2R_1} = 0$$~~

$$\frac{V_{op} - 0}{R} + \frac{V_{op} - V_o}{2R_1} = 0$$

18.14

$$F \cdot G \xrightarrow{\mathcal{L}} f * g$$



$$f * g = \int_{-\infty}^{\infty} f(t-\tau)g(\tau)d\tau = \int_{-\infty}^{\infty} \theta(t-\tau)\theta(\tau-\tau)d\tau = \int_{-\infty}^{\infty} \theta(\tau)d\tau$$

$$V_{in} = (\theta_1 - 2\theta_2 + 2\theta_4 - 2\theta_6) V_0$$

$$V_{in} = \mathcal{L}(V_{in}) = V_0$$

$$\frac{\text{Ⓢ} - V_{in}}{R} + \frac{\text{Ⓢ} - V_{out}}{1/s} = 0$$

$$\frac{V_{in}}{sR} + V_{out} \cdot R = 0 \Rightarrow V_{out} = -\frac{1}{sCR} \cdot V_{in} =$$

$$= -\frac{V_0}{sCR} \cdot \left(\frac{1}{s} - \frac{2e^{-2}}{s} + \frac{2e^{-4}}{s} - \frac{2e^{-6}}{s} \right)$$

$$\theta(\tau)\theta(\tau-\tau) = \theta(1-\tau)\theta(\tau)$$

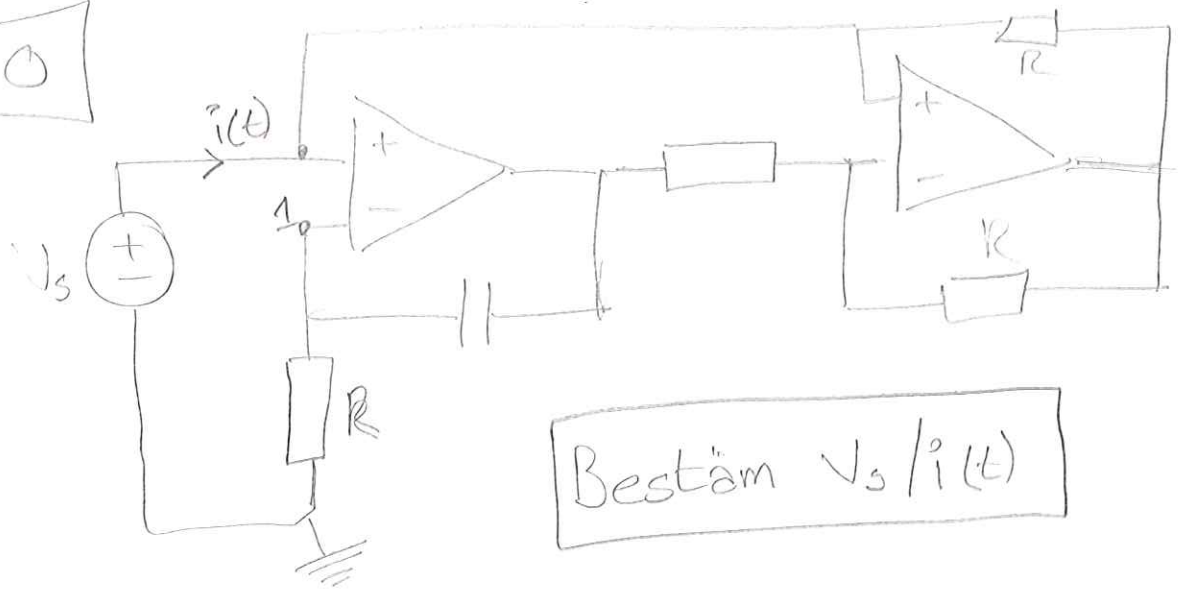
18.16

LS ger derivatö,

⇒ negativa derivatan,

$-\frac{V_0 L}{C} \int v_c(t) dt.$

8.10



Bestäm $V_s / i(t)$

$\frac{V_i - 0}{R} + V_i -$