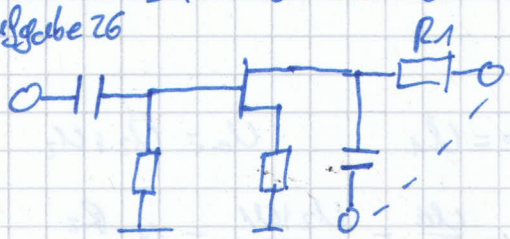
27.6.18

Elektronik-Übung

Aufgabe 26



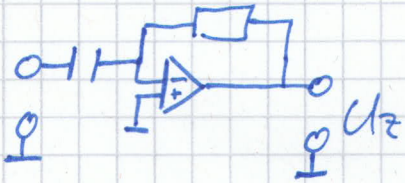
- $I_D = 6mA$
- $U_{GS} = -2V$

$$\left.\begin{aligned} U^+ &= I_1 R_1 + U_{DS} + I_2 R_2 \\ I_1 &= I_2 \\ U_{GS} & \end{aligned}\right\} U^+ = I_1 R_1 + U_{DS} + U_{GS} \Rightarrow R_1 = \frac{U^+ - U_{GS} - U_{DS}}{I_1}$$

$$R_1 = \frac{12,5 - 1,5 - 2V}{5 \cdot 10^{-3}} = \frac{8}{5} \cdot 10^3 \Omega = 1,6 k\Omega$$

$$R_2 = \frac{U_{GS}}{I_1} = \frac{2V}{5 \cdot 10^{-3} A} = 400\Omega$$

Aufgabe 27

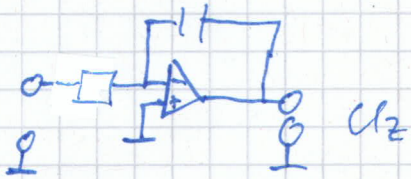


a) Differenzierer

b) $I_1 = I_2 \qquad I_2 = -\frac{U_a}{R}$

$$Q = C U_e \Rightarrow \frac{dQ}{dt} = I_1 = C \frac{dU_e}{dt}$$

$$U_a = -RC \frac{dU_e}{dt}$$



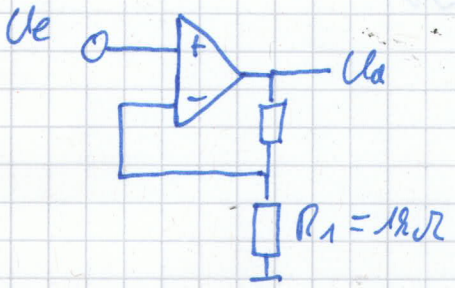
Integrierer

$$I_1 = I_2 ; I_2 = -C \frac{dU_a}{dt}$$

$$\frac{dU_a}{dt} = -\frac{1}{RC} U_e$$

$$U_a = -\frac{1}{RC} \int U_e dt$$

Aufgabe 28



$U_e = U_1 \qquad U_a = U_2 + U_1$

$$V = \frac{U_a}{U_e} = \frac{U_2 + U_1}{U_1} = 1 + \frac{R_2}{R_1}$$

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