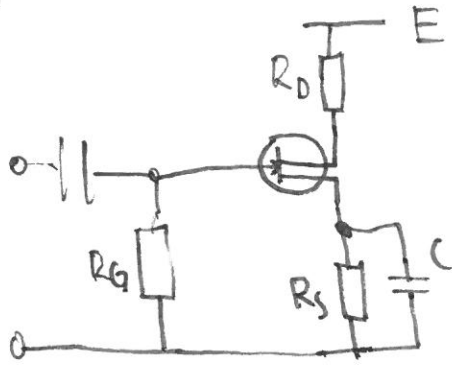


4-24)



$$R_G = 1 \text{ M}\Omega$$

$$R_D = 20 \text{ k}\Omega$$

$$R_S = 2 \text{ k}\Omega$$

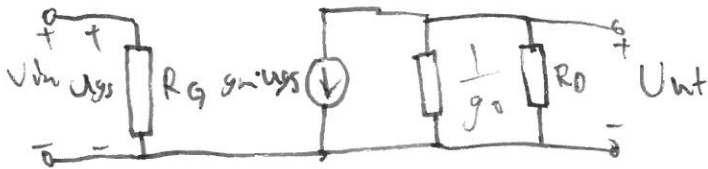
$$g_m = 3 \text{ mS}$$

$$g_o = 10 \mu\text{S}$$

$$u_{in}(t) = 20 \sin(10^3 \cdot t) \text{ [mV]}$$

c är stor

ekvivalent småsignal schema:



$$(1) u_{in} = u_{gs}$$

$$(2) u_{out} = -g_m \cdot u_{gs} \cdot R_D \parallel \frac{1}{g_o}$$

$$U_m = 20 \cdot 10^{-3} \Rightarrow$$

$$u_{out} = -3 \cdot 10^{-3} \cdot 20 \cdot 10^{-3} \cdot \frac{20 \cdot 10^3 \cdot (10 \cdot 10^{-9})^{-1}}{20 \cdot 10^3 + (10 \cdot 10^{-9})^{-1}} = -6 \cdot 10^{-5} \cdot \frac{2 \cdot 10^9}{1.2 \cdot 10^5} = -\frac{1.2 \cdot 10^5}{1.2 \cdot 10^5} = -1$$

$$\Rightarrow u_{out}(t) = -\sin(10^3 \cdot t) = \sin(10^3 \cdot t + \pi) \text{ [V]}$$