

$$I_{R1} = (-V_{EB} - (-V_i)) / R_1 = \frac{V_i}{R_1} - \frac{0,7}{68k}; \quad I_{R2} = \frac{V_{EB}}{R_2} = \frac{0,7}{22k} = 31,8 \mu A$$

$$I_B = I_{R1} - I_{R2} = \frac{V_i}{R_1} - \frac{0,7}{68k} - \frac{0,7}{22k} = \frac{V_i}{R_1} - 42,1 \mu A$$

$$V_{i \min} \frac{R_2}{R_1 + R_2} = V_{EB} \Rightarrow V_{i \min} = 0,7 \cdot \frac{22 + 68}{22} = 2,86V; \quad V_i < V_{i \min} \begin{cases} I_B = 0 \\ V_o = -12V \end{cases}$$

$$I_B(V_i = 3V) = \frac{3}{68k} - 42,1 \mu A = 2,12 \mu A; \quad V_o = -12 + 2,12 \cdot 10^{-6} \cdot 150 \cdot 10^3 = -11,68V$$

$$V_o(V_i = 4V) = -9,48V$$

$$V_o(V_i = 5V) = -7,2V$$

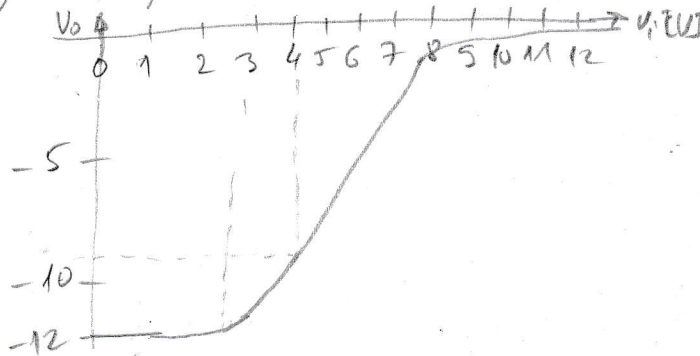
$$V_o(V_i = 6V) = -5,06V$$

$$V_o(V_i = 7V) = -2,86V$$

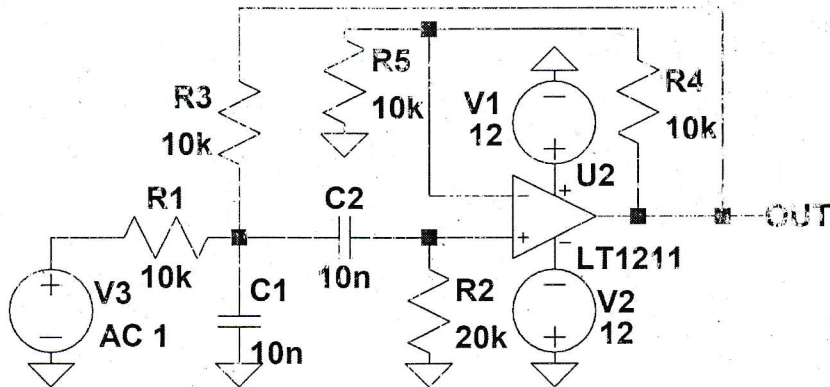
$$V_o(V_i = 8V) = -0,65V$$

$$V_o(V_i = 9V) = -0,2V$$

$$V_o(V_i = 10 \dots 12V) = -0,2V$$



2.



.ac dec 100 150 15k

