

Homework 8 – Applications with OpAmp

Design and size an inverting amplifier operated from a single power supply, knowing that:

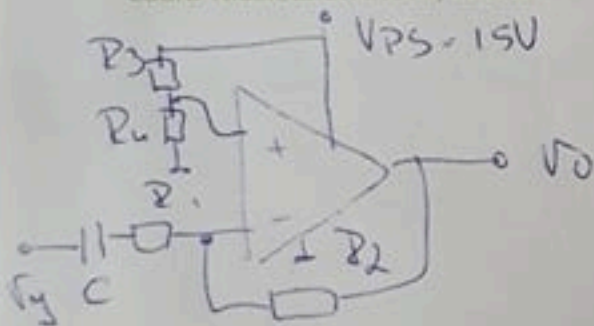
$$V_{PS} = 15 \text{ V}, A_{v,dc} = 1, A_{v,ac} = -10$$

For the proposed schematic:

- What is the expression $v_o(v_i)$?
- Draw the VTC $v_o(v_i)$.
- Plot $v_o(t)$ and $v_i(t)$ for $v_i(t) = 0.2\sin\omega t$ [V].

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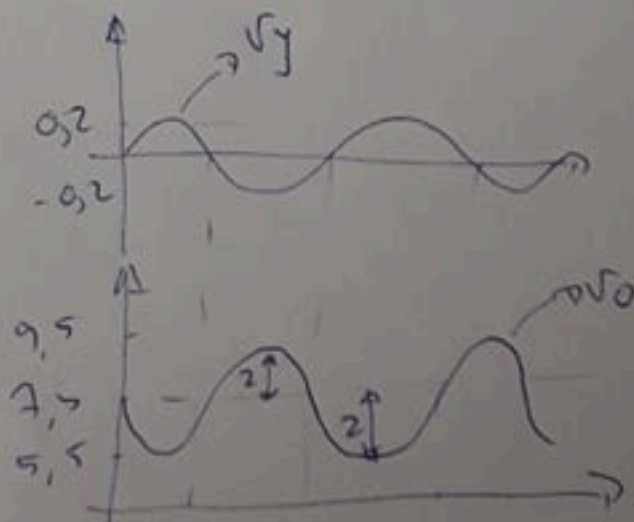
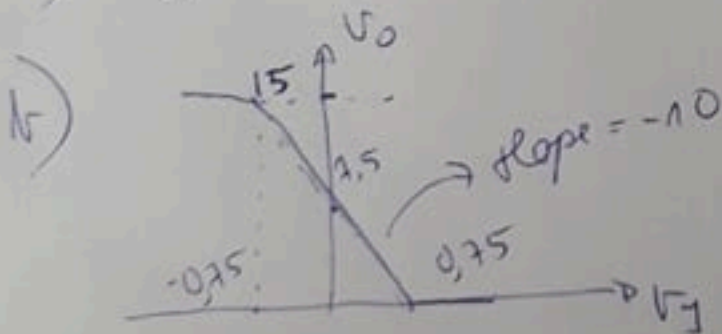
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$$R_3 = R_4 = 10 \text{ k}\Omega$$

$$A_{v,ac} = -\frac{R_2}{R_1} = -10 \Rightarrow \begin{cases} R_2 = 10 \text{ k}\Omega \\ R_1 = 1 \text{ k}\Omega \end{cases}$$

a) $v_o = -10v_i + 7,5 \text{ dc}$



c) $v_o = -10v_i + 7,5 = -2\sin\omega t + 7,5$