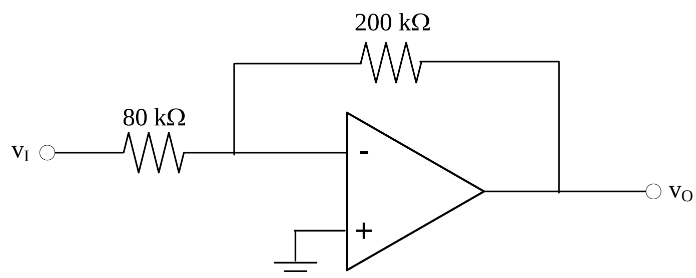
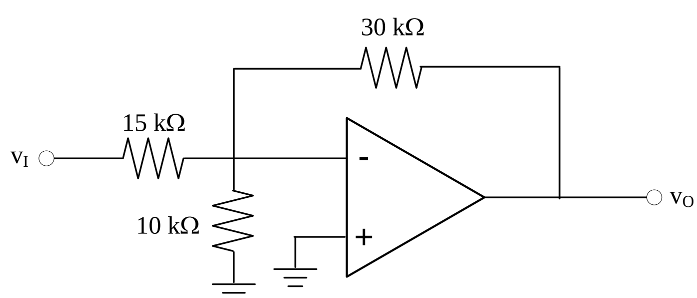
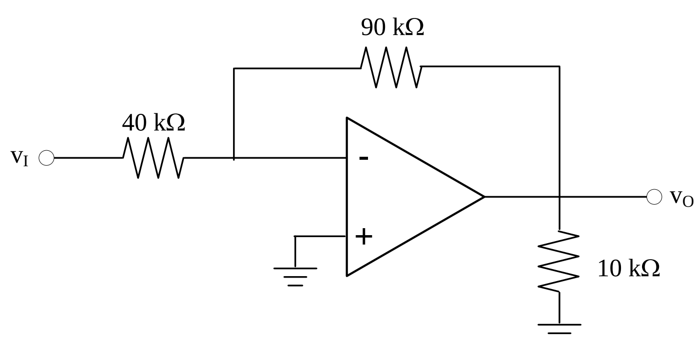
EE 315

Module 2 ! π tNI·ŐǘλŎŜ tN2ōfŜYă

1. For the following circuits, find the closed loop voltage gain and the input resistance. Assume ideal op-amps.







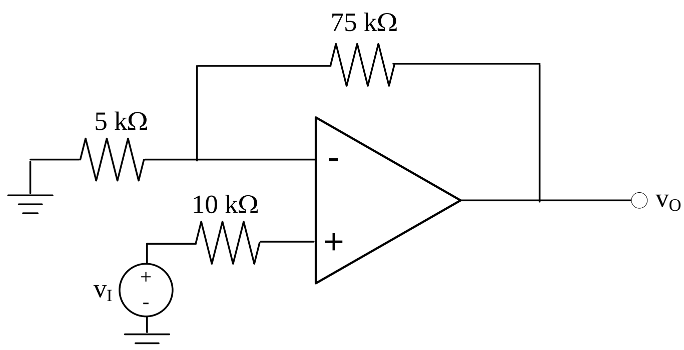
2. Design an ideal inverting amplifier with a closed loop gain of -5V/V. The output voltage is limited to $-10\text{ V} \leq v_O \leq 10\text{V}$, and the maximum current in any resistor is limited to 50µA.

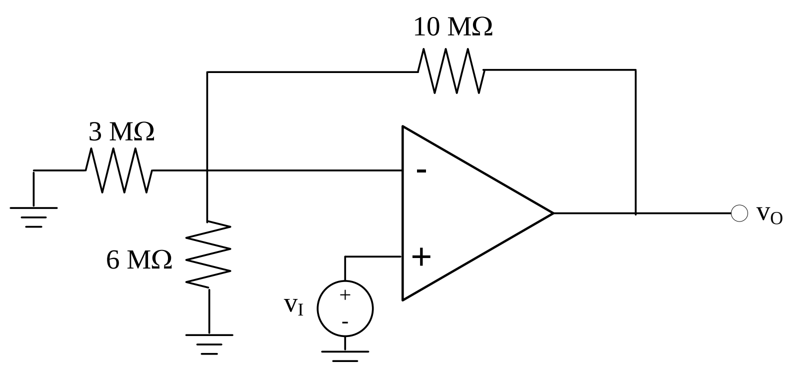
3. Using the standard inverting configuration with an ideal op-amp, design for a closed loop gain of -1000 V/V. The maximum resistor value allowed in 100 kΩ. What is the input resistance? Use the circuit with the T resistor feedback and the same maximum resistor value, design the circuit for the same closed-loop gain of -1000 V/V. What is the input resistance for this circuit?

4. Design a weighted summer circuit for the following equations:
    a. $v_O = -2v_1 - 8v_2$
    b. $v_O = -12v_1 - 3v_2 + 2v_3$

Resistors should range between 10kΩ and 1MΩ

5. For the following circuits, find the closed loop voltage gain and the input resistance. Assume ideal op-amps.





6. We worked an example where a potentiometer was used to divide the resistance between R1 and R2 for a typical non-inverting amplifier configuration. We found that the range of gain was 1 to infinity. For this problem, consider how you might add a fixed resistor to the circuit to prevent the gain from increasing above 11 V/V. Draw the circuit and show how you calculated the new range of closed loop gain from 1 to 11 V/V.

7. [illegible]