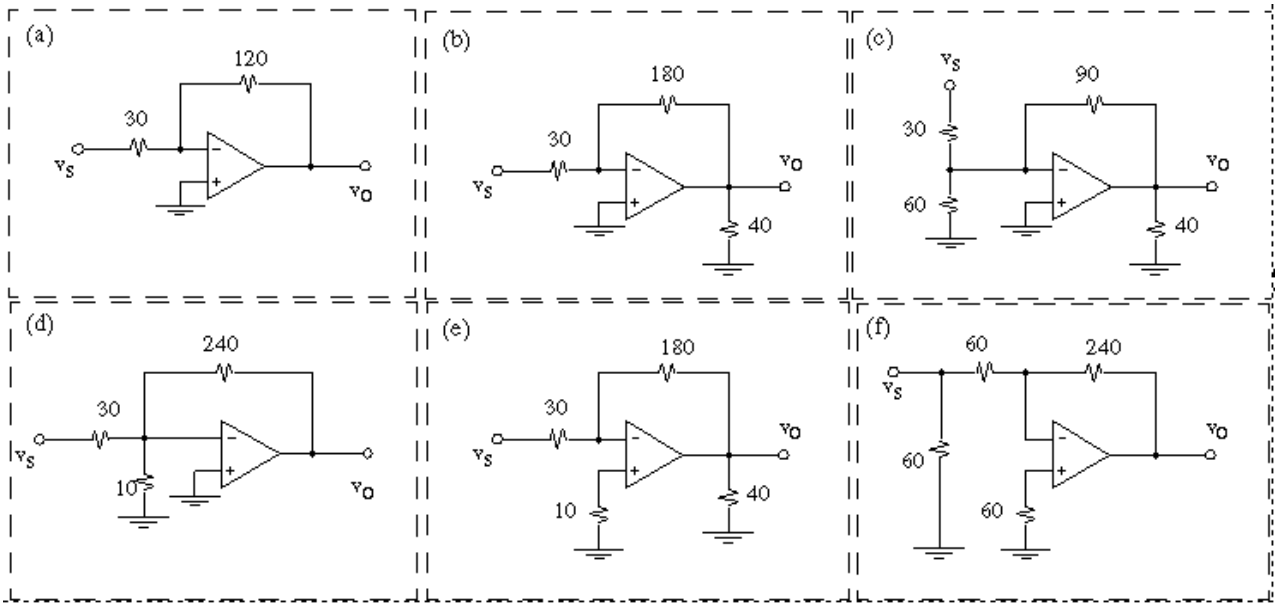
Assignment 3

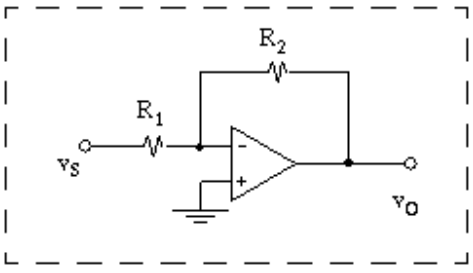
Problem 1:

Assume ideal opamps determine the voltage transfer gain $T = v_O/v_S$ and input resistance R_{in} for each of the configurations by inspection. (Resistances are in kΩ).

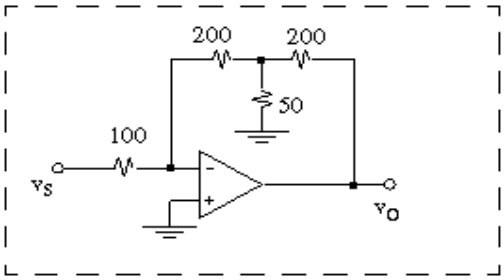


Problem 2:

(a) Using resistances no larger than 1.0 MΩ design an amplifier with gain -20 V/V and the largest possible R_{in}, using the inverting configuration. Assume ideal opamp. (b) What is the input resistance?



Problem 3:



Find

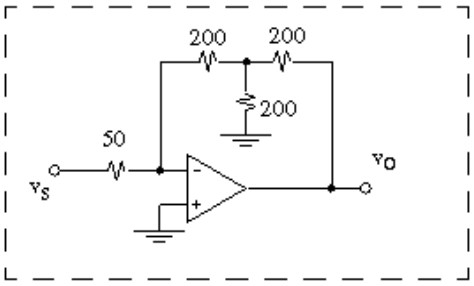
(a) transfer function $T = v_O/v_S$ and

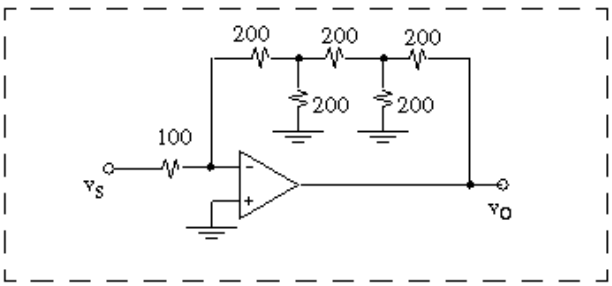
(b) input resistance R_{in}.

(Resistances are in kΩ)

Problem 4

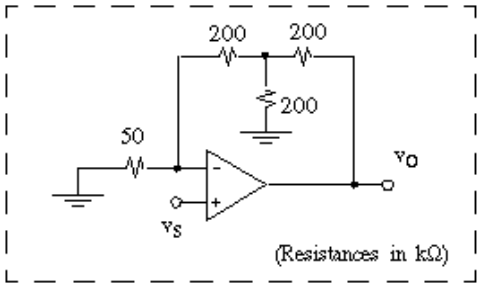
Find (a) transfer gain $T = v_O/v_S$ and (b) input resistance R_{in}

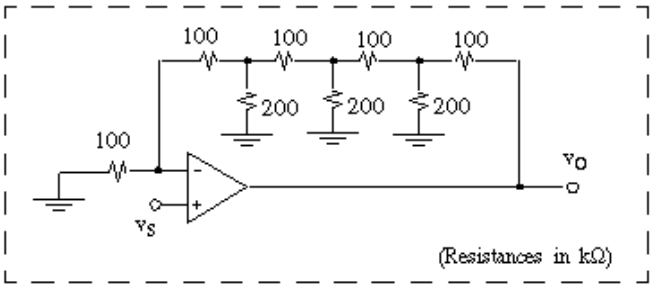




Problem 5:

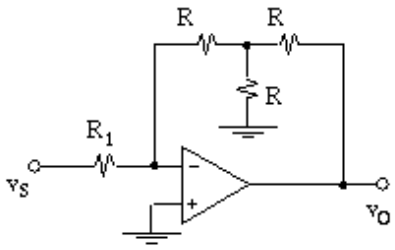
Find transfer gain $T = v_O/v_S$, input resistance R_{in}





Problem 6:

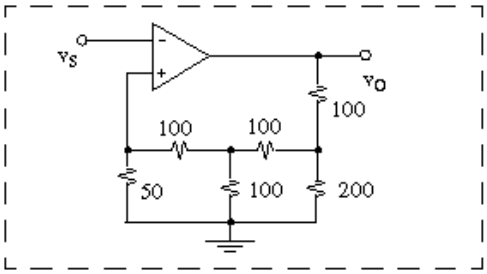
(a) Using the inverting configuration with single-tee feedback (as shown) and resistances no larger than 600 kΩ, design an amplifier with gain -12 V/V and the largest possible R_{in}. Assume ideal opamp.



(b) What is the R_{in}?

Problem 7:

Find the transfer function $T = v_O/v_S$



Problem 8:

Determine input resistance R_{in} and transfer gain v_O/v_S for the circuit shown, assuming that

(a) $R_f = \infty$

(b) $R_f = 100\text{k}\Omega$