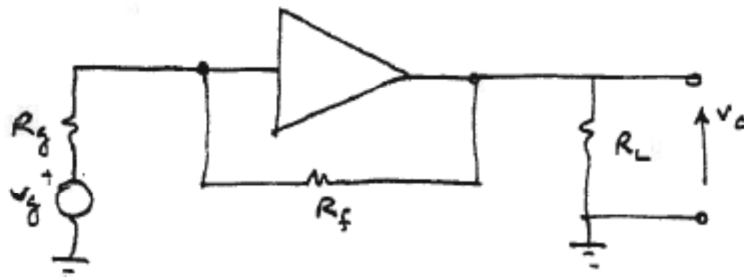


Problems II

1. For the circuit shown in the figure, all the transistors, biasing resistors etc, in the forward amplifying path have been lumped into the triangle.



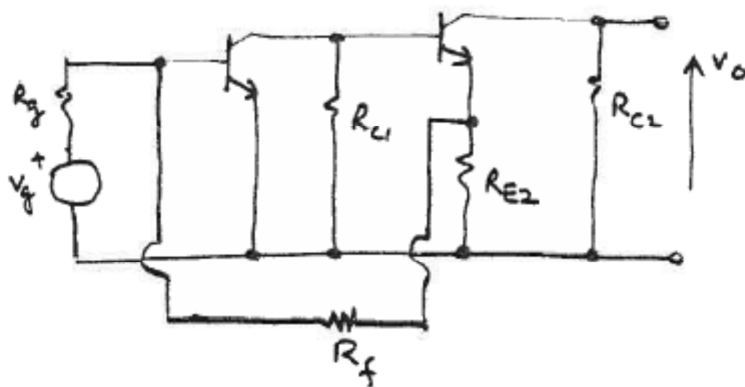
$$R_g = 1\text{ k}\Omega$$

$$R_f = 10\text{ k}\Omega$$

$$R_L = 50\text{ }\Omega$$

Calculate v_o/v_g assuming that the loop gain is infinite. Obtain a better estimate given that loop gain is 15.

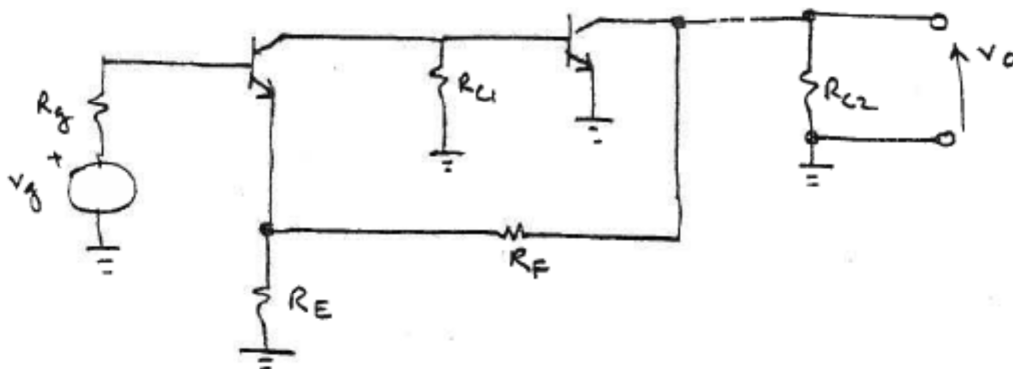
2. The partial ac equivalent circuit of an amplifier is shown below (capacitors have become short circuits, supplies have been made ac grounds etc).



Assuming that the loop gain is very large, show that:

$$\frac{v_o}{v_g} = R_{C2} \times \frac{R_f + R_{E2}}{R_{E2}} \times \frac{1}{R_g}$$

3. The partial ac equivalent circuit of an amplifier is shown below.



Calculate the overall gain (closed loop gain) v_o/v_g assuming that the loop gain is very large. Do you expect the loop gain to be large?