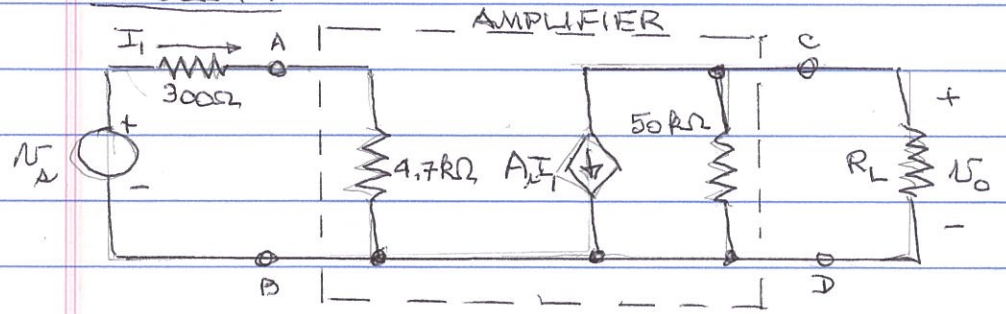
Text Problem 2.12

PROBLEM 1

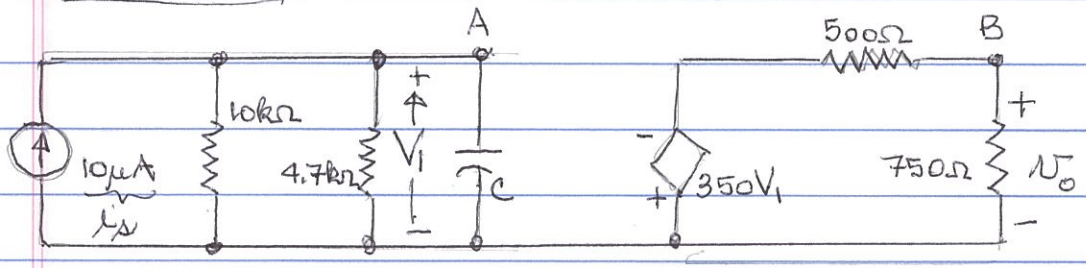


A) For $A_i = 200$, find R_L so that $|A_v| = (V_o/V_s) = 80$

B) Repeat (A) for $A_i = 100$.

C) The circuit is modified to include a resistance of 20kΩ connected between terminals A and C. Using the value of R_L obtained in part (A), evaluate A_v for $A_i = 200$ and $A_i = 100$.

PROBLEM 2



A) Evaluate $A_R = V_o/i_s$ at low frequency (C is open)

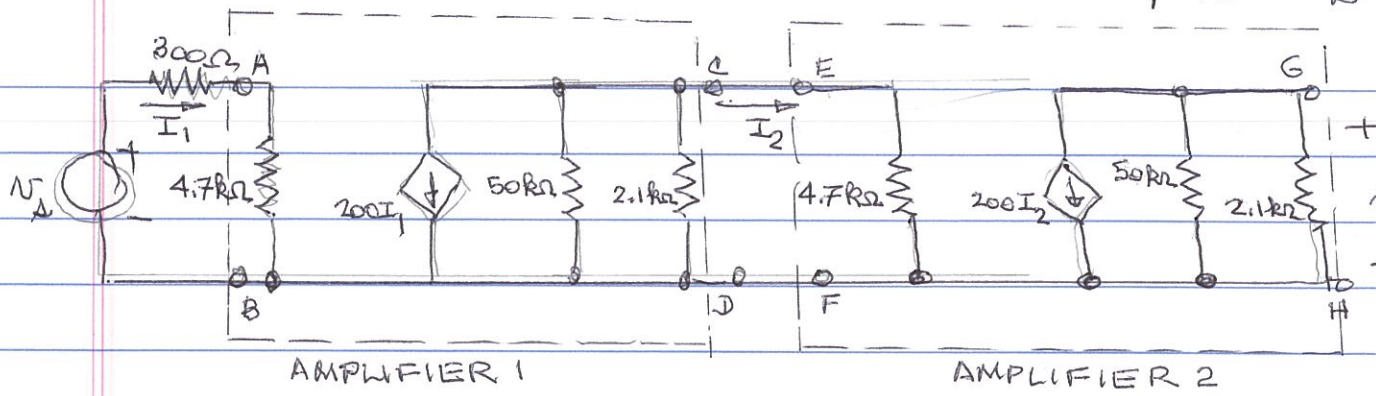
B) Determine C to obtain a 3-dB bandwidth of 10kHz

C) If C is moved and connected between A and B, repeat part B

D) Write the transfer function $A_R(j\omega)$ for the circuit in (B).

E) Evaluate $A_R(j\,10^6)$

F) At what frequency is the function in (C), $|A_R(j\omega)| = 1$ or 0 dB



A) Find $A_V = \frac{V_o}{V_s}$

B) This is just the stage in Problem 1 (Amplifier 1) cascaded with another "identical" stage. Is the value in (A) above equal to the square of the gain in Problem I or 6,400? If not, why not?

HINT: Obtain the Thevenin equivalent of Amplifier 1, and use this to drive Amplifier 2.