

Problem 1 (20 points)

Assuming the op-amps are ideal, determine v_{out}/v_{in} .

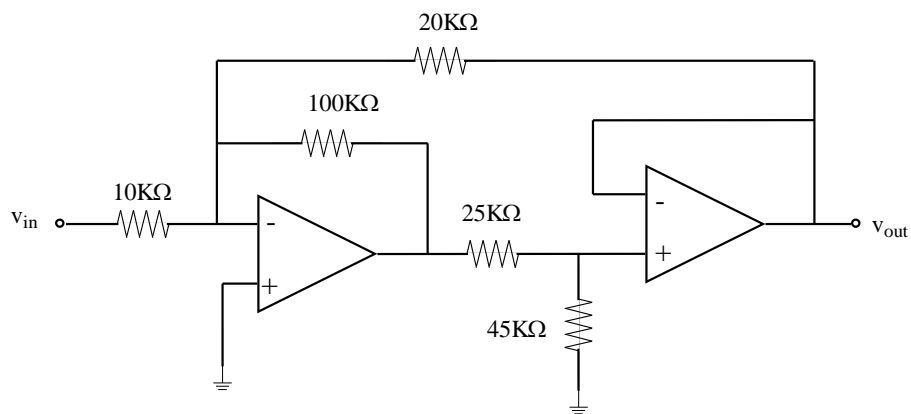


Figure 1: Circuit for Problem 1.

Problem 2 (20 points)

For the given circuit, determine $v_c(t)$ for $t \geq 0$.

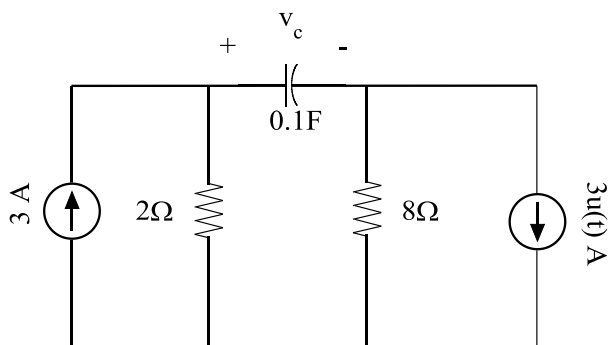


Figure 2: Circuit for Problem 2.

Problem 3 (20 points)

Assume the switch has been open from $t = -\infty$ and closes at $t = 0$. Determine $v_c(t)$ for $t \geq 0$.

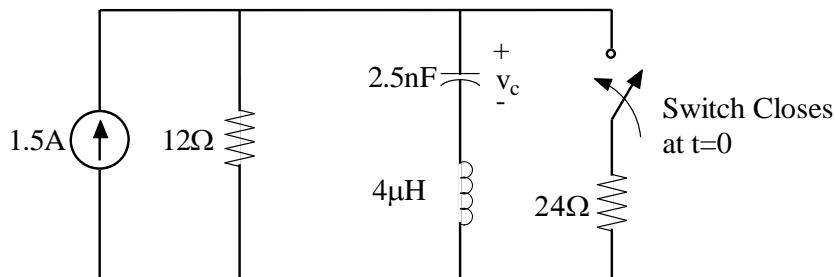


Figure 3: Circuit for Problem 3.

Problem 4 (20 points)

Assume the switch has been closed from $t = -\infty$ and opens at $t = 0$.

1. Determine the differential equation describing $v_1(t)$ for $t \geq 0$. Do not solve.
2. Determine the initial values $v_1(0^+)$ and $\frac{dv_1}{dt}|_{t=0^+}$.
3. Determine the steady state value $v_1(t)$ as $t \rightarrow \infty$.

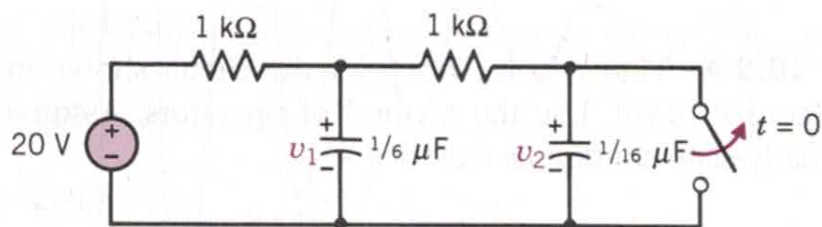


Figure 4: Circuit for Problem 4.

Problem 5 (10 points)

1. Determine C_{eq} in terms of C_1 , C_2 and C_3 .
2. Determine L_{eq} in terms of L_1 , L_2 and L_3 .

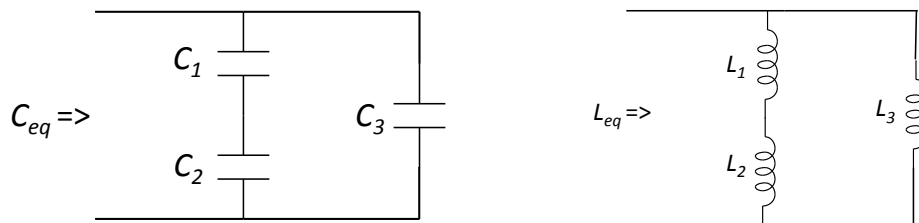


Figure 5: Circuits for Problem 5.