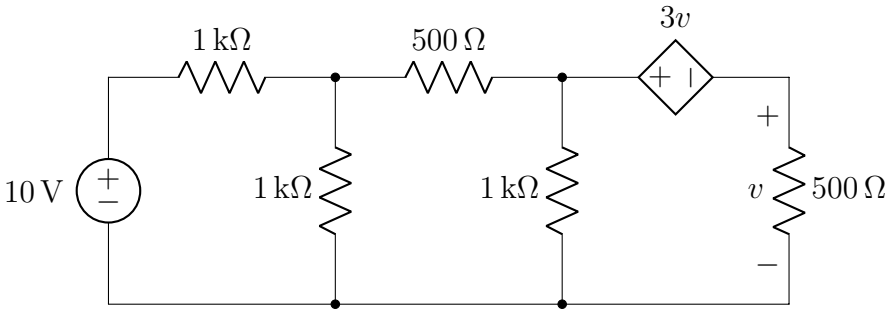
NAME:

Final Exam
-
Circuits

Duration: 180 minutes

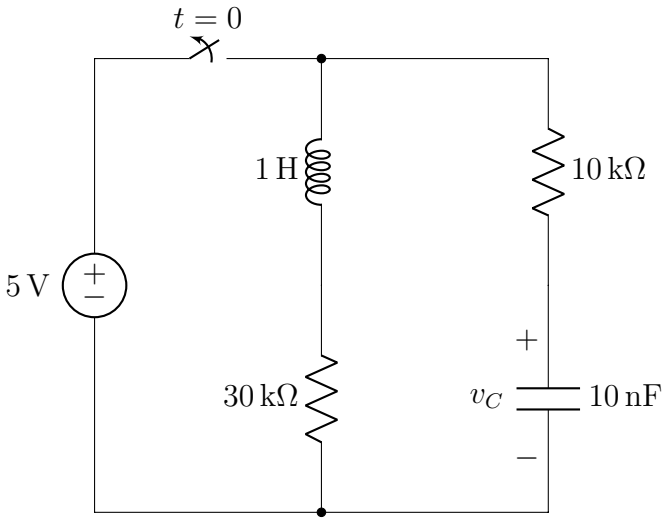
Except when stated otherwise, you should justify all your answers.
Your application of circuit analysis methods will be evaluated and it will reward you with more points than the final answer.
All the values should be given with a unit.

Exercise 1 - DC Analysis



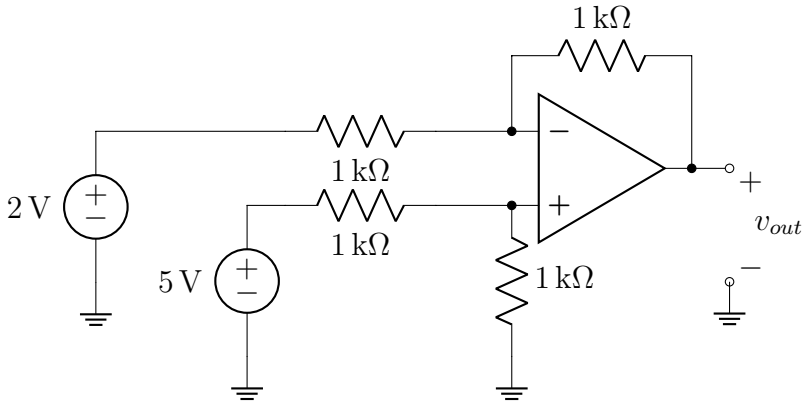
- By the method of your choice, determine the voltage v.

Exercise 2 - Transient analysis



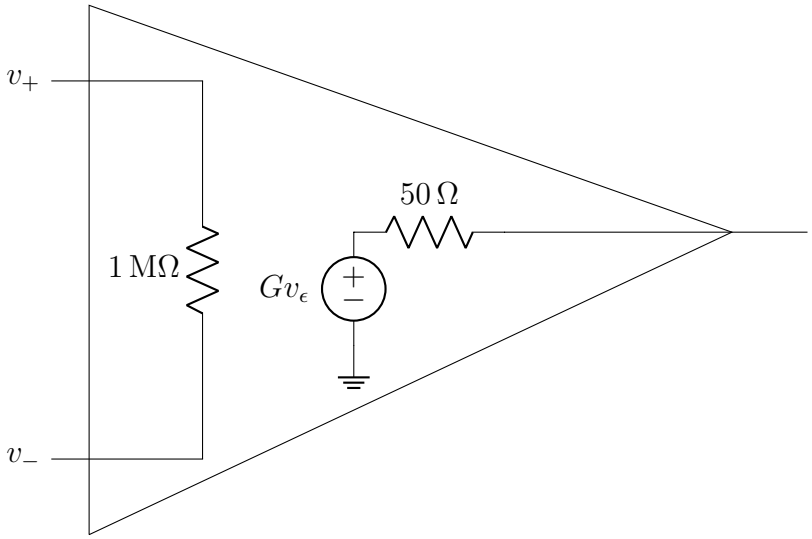
- Determine $v_C(t)$ for $t \geq 0$.

Exercise 3 - Op amp



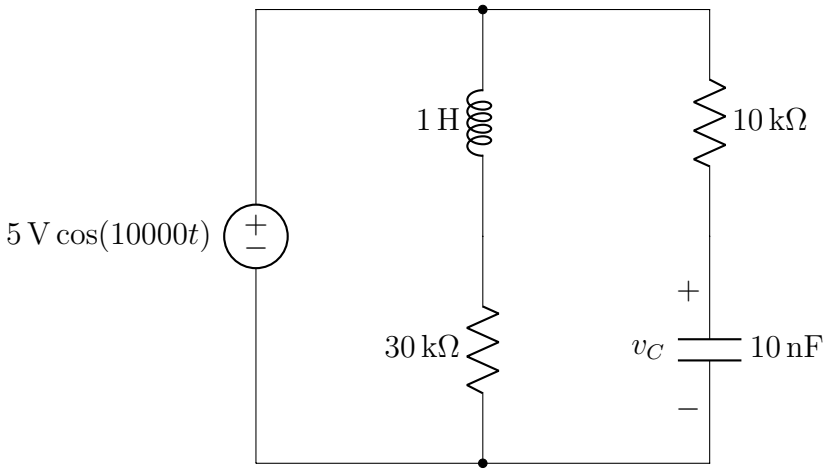
- Considering an ideal op amp, determine v_{out}.
- Considering a real model for the op amp, given in next page, determine v_{out}.

Realistic model of op amp



$G = 100000$
$v_\epsilon = v_+ - v_-$

Exercise 4 - Sinusoidal analysis



- Determine the sinusoidal steady-state voltage $v_C(t)$.