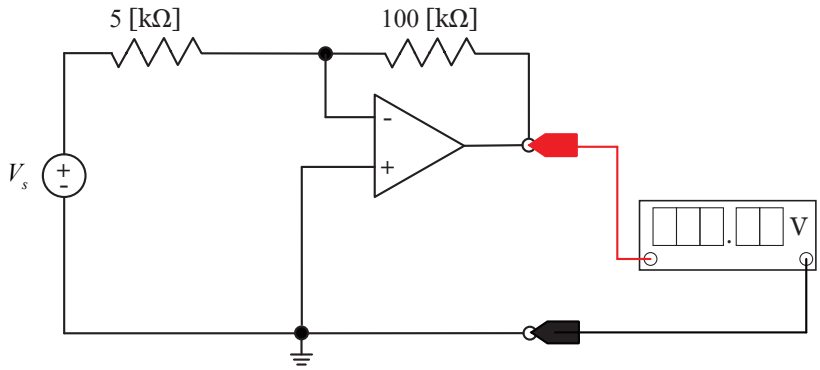
Op-amps, Inductors and Capacitors Worksheet

MEMS 0031 - Electrical Circuits

June 24th, 2020

Problem #1

Given the Op-amp shown below, and using the Finite Gain model, determine the ratio of the output to input voltages, given an input resistance of 500 [kΩ], an output resistance of 5 [kΩ] and a gain of 300,000.



Problem #2

There are various devices that use capacitors are proximity switches. When the switch is activated, the button can be represented as a set of parallel capacitors; two capacitors in series, in parallel with the original capacitor. The capacitors in series are connected to a node that is connected to ground. Given the system below, where $C = 25$ [pF] for all capacitors, determine the output voltage when the button is and is not activated.