

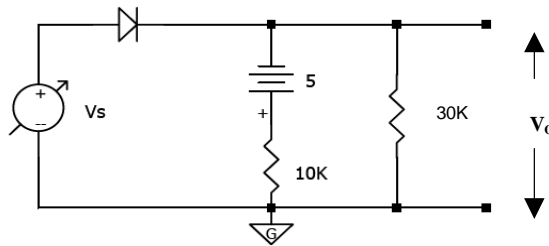
## Physics 517/617 Homework 3 (Due Oct. 20<sup>th</sup>)

### Problems for Diode Circuits

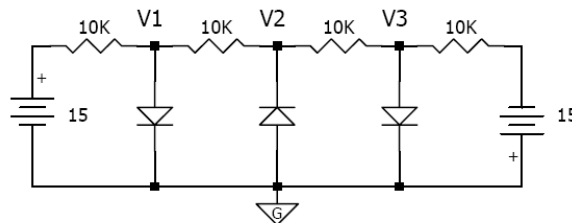
*Basic Electronics, Curtis Meyers*

Chapter 4 problems: 4-10

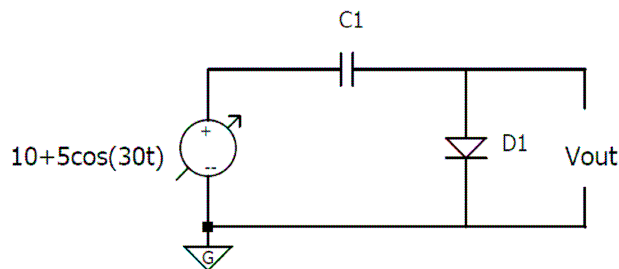
- The input  $v_s$  of the circuit shown below varies linearly as a function of time from -10 to 10 volts. Sketch the output voltage  $v_o$  to the same time scale as the input voltage assuming ideal diodes.



- Find the voltages  $V_1$ ,  $V_2$ , and  $V_3$  for the circuit below (assume ideal diodes).



- The circuit below is driven by a D.C. offset sinusoidal voltage. What is the steady state voltage across the capacitor? What is the steady state voltage,  $V_{out}$ , across the diode? (assume ideal diodes)



4. In the circuit below the voltage source supplies 5.0V to the circuit. The non-ideal silicon diode(  $i = i_0(\exp(39V_d) - 1)$ ) has an  $i_0=1.0 \times 10^{-11}$  A. For what value of  $R=500\Omega$ , what is the current through and voltage drop across the diode?

