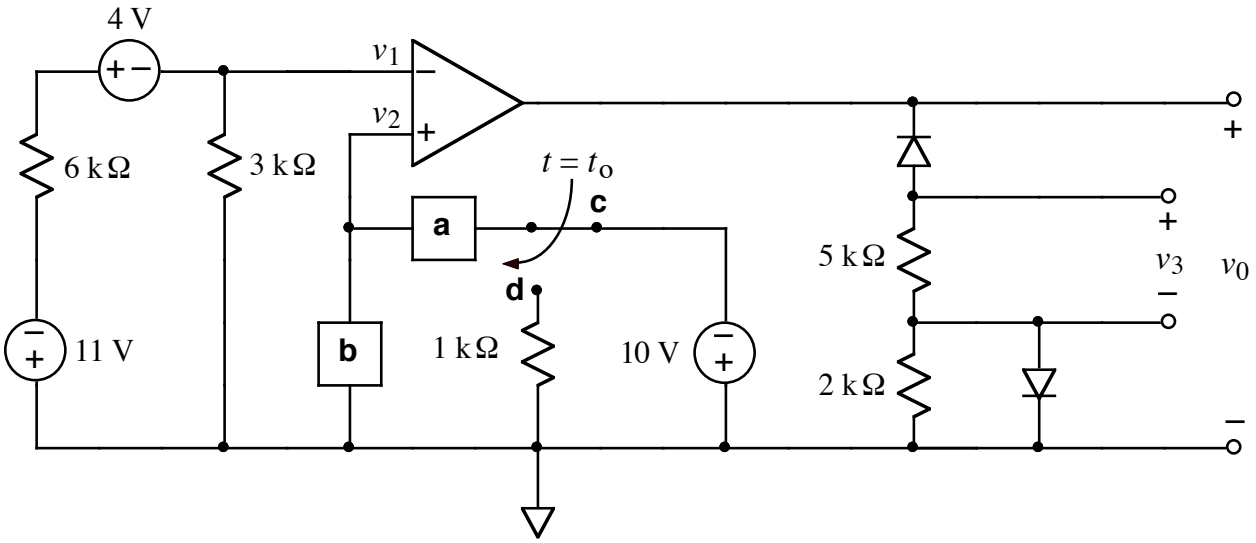
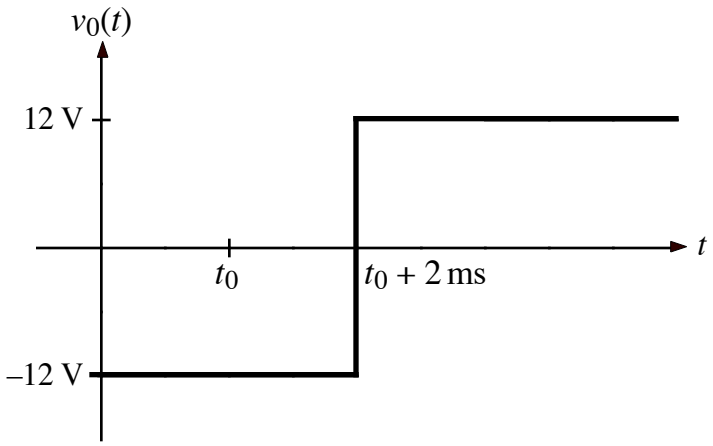
HOMEWORK #18

1.



After being in position **c** for a long time, the switch moves from **c** to **d** at $t = t_o$.

Rail voltages = ±12 V



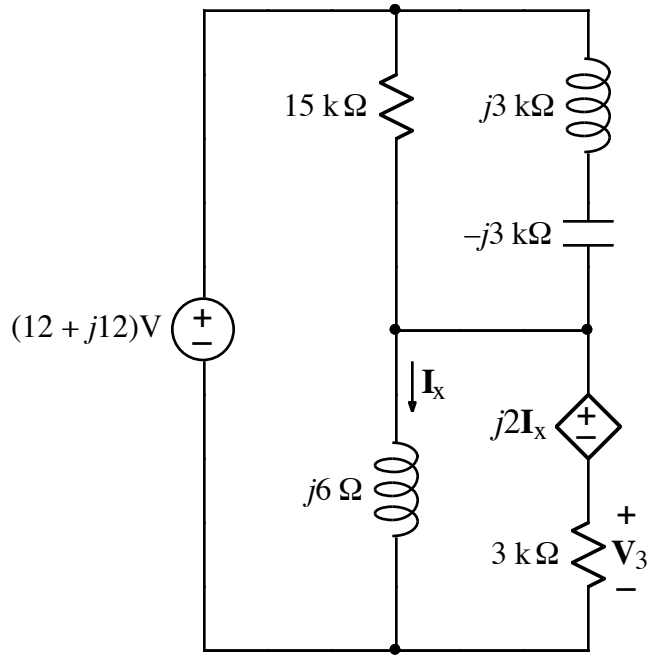
Choose either an R or C to go in box **a** and either an R or C to go in box **b** to produce the v_o(t) shown above. (Note that v_o stays high forever after t_o + 2 ms.) Specify which element goes in each box and its value.

2. Sketch v_1(t), showing numerical values appropriately.

3. a) Sketch v_2(t), showing numerical values appropriately.

   b) Sketch v_3(t). Show numerical values for $t < t_o$, for $t_o < t < t_o$ + 2 ms, and for t_o + 2 ms < t. Use the ideal model of the diode: when forward biased, its resistance is zero; when reverse biased, its resistance is infinite.

4.



A frequency-domain circuit is shown above. Write the value of phasor $\mathbf{V}_3$ in polar form.

5. Given ω = 37 rad/s, write a numerical time-domain expression for $v_3(t)$, the inverse phasor of $\mathbf{V}_3$.