ELEC 344 - 201: Applied Electronics and Electromechanics

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Tutorial 3

1) Using the circuit in Fig. 1:
    a) Plot all the relevant waveforms ($V_{out}, v_a, v_b, v_c, i_a, i_b, i_c$).
    b) What is the output voltage? And the current?

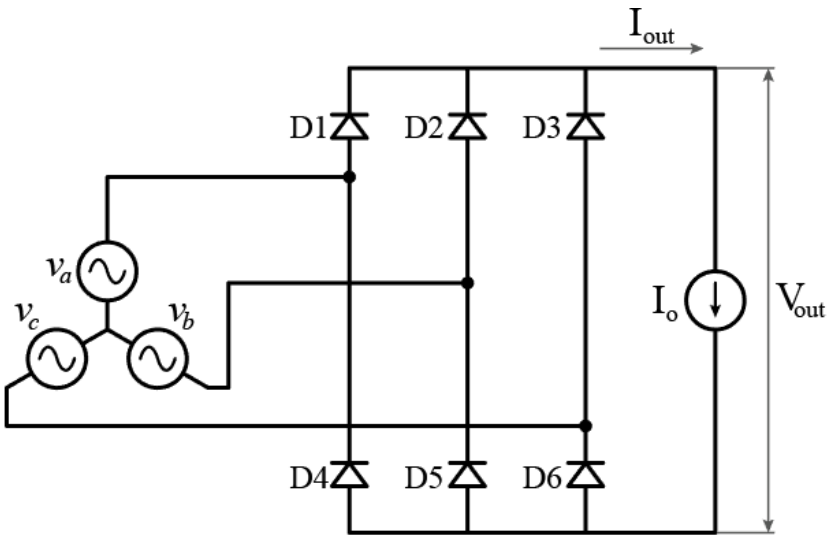

Figure 1 – Three Phase Rectifier

2) Figure 2 illustrates a buck converter
    a) Calculate the duty cycle for an output voltage of 10 V.
    b) Plot all relevant waveforms with their values (v_L, i_L, i_C).
    c) What happens if the switching frequency is increased to 100 kHz.

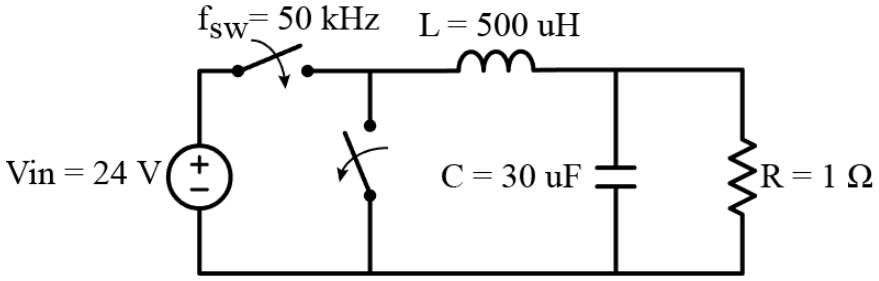

Figure 2 – Buck Converter

3) For the Operational Amplifier configurations shown in Fig 3, 4 and 5 derive the relationship output/input for each case.

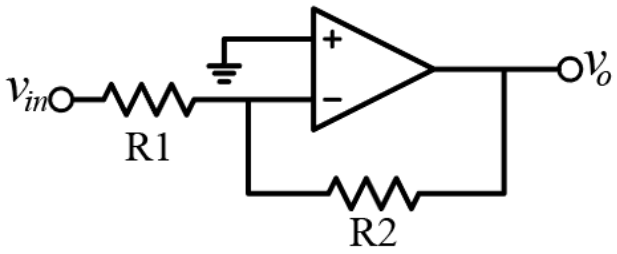

Figure 3 - Inverting

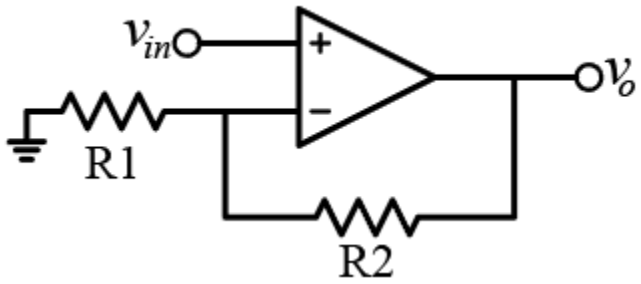

Figure 4 - Non inverting

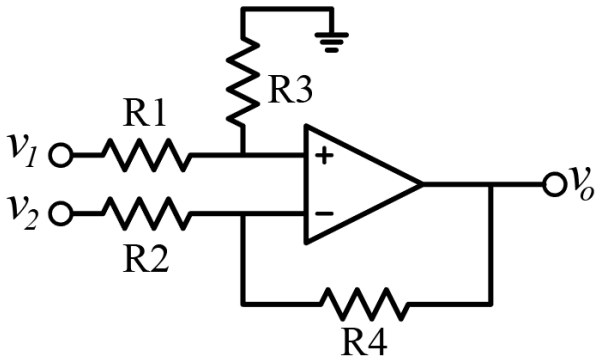

Figure 5 - Differential