

## 1 KCL

Consider the circuit shown below:

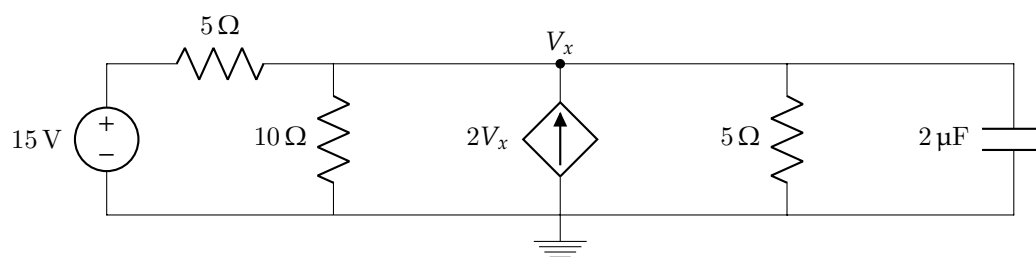


Figure 1: Adapted from Ulaby, Maharbiz, Furse. *Circuits*. Third Edition

Determine the voltage  $V_x$  at steady state.

## 2 KVL

Consider the circuit shown below:

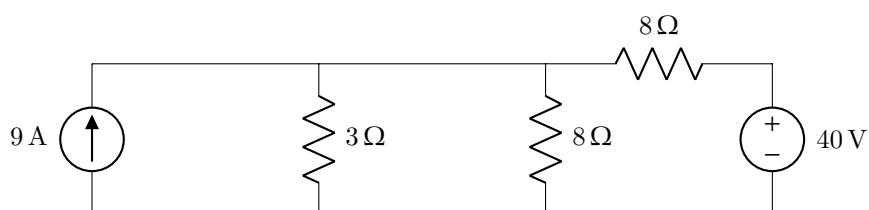
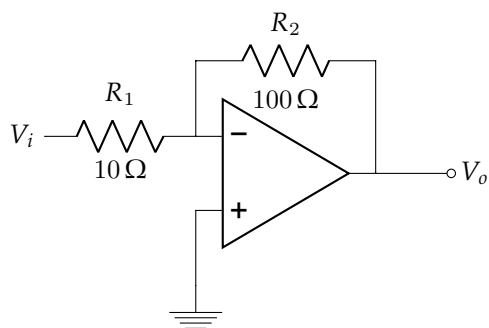


Figure 2: Adapted from Ulaby, Maharbiz, Furse. *Circuits*. Third Edition.

Using KVL, determine the amount of power supplied by the voltage source. Do not use superposition.

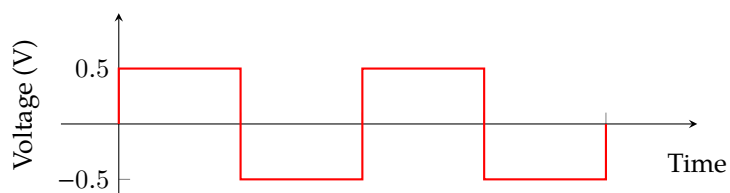
### 3 Op-Amp Review

Consider the circuit below:

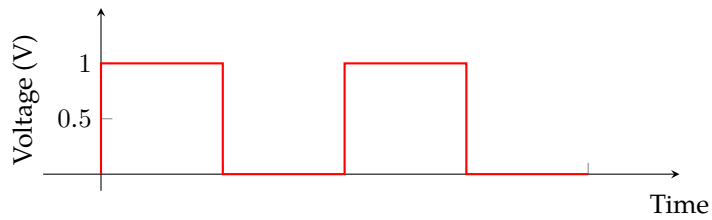


a) Calculate  $V_o$  if  $V_i = 0.5\text{ V}$ .

b) Sketch  $V_o$  if  $V_i$  is a square wave with  $V_{pp} = 1\text{ V}$ .



- c) Use **superposition** to sketch  $V_o$  if  $V_i$  is a  $1\text{ V}_{pp}$  square wave with a  $0.5\text{ V}$  DC offset.



- d) Consider the non-inverting input. What value could we replace ground with to make the output from part (c) centered around  $0\text{ V}$ ?
- e) Suppose we only have a  $1\text{ V}$  source, but still wish to center the output from (c) about  $0\text{ V}$ . What circuit block should we place at the noninverting input to accomplish this goal?