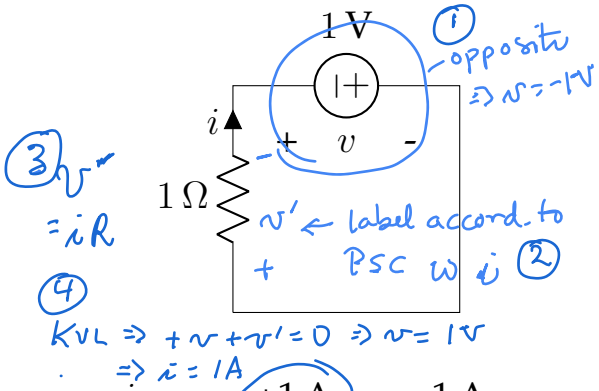
Learning Assessment L02B, 6.200S23 Name: Solutions

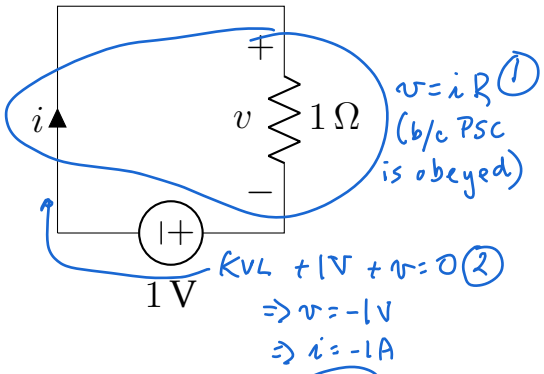
All responses that show sincere effort will receive full credit.

1. Circle the correct variable values below each of the circuits.



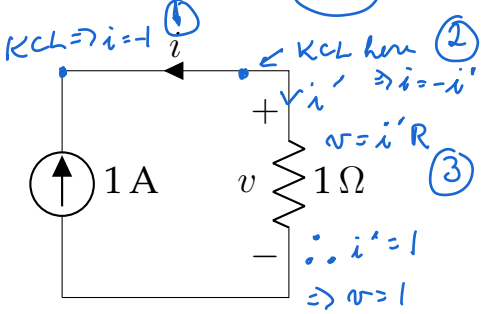
$i =$ +1 A **-1 A**

$v =$ +1 V **-1 V**



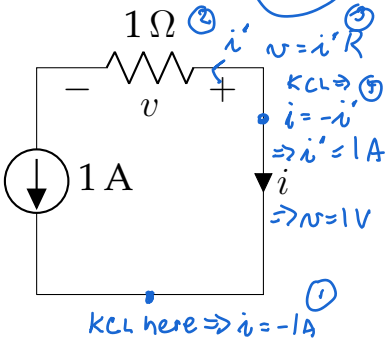
$i =$ +1 A **-1 A**

$v =$ +1 V **-1 V**



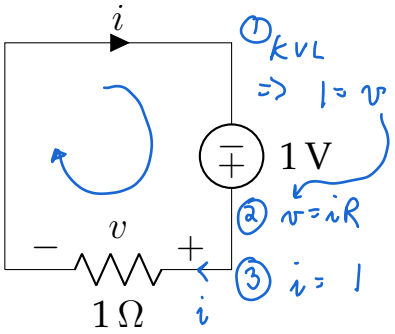
$i =$ +1 A **-1 A**

$v =$ **+1 V** -1 V



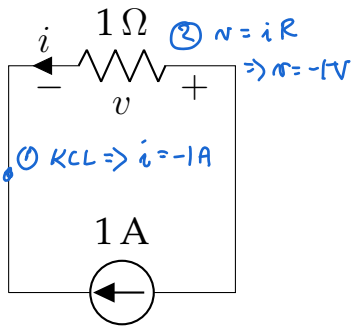
$i =$ +1 A **-1 A**

$v =$ **+1 V** -1 V



$i =$ **+1 A** -1 A

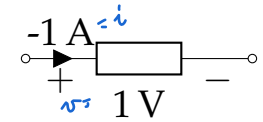
$v =$ **+1 V** -1 V



$i =$ +1 A **-1 A**

$v =$ +1 V **-1 V**

2. For each element below, assume it is connected to an external circuit network. Is power flowing *from the external circuit* to the element, or *from the element* to the external circuit, or is it impossible to say with the given information? Circle one option for each element:

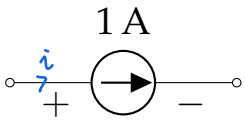


$p = iv = -1 \Rightarrow$ to ext. ckt, $p < 0$

from ext. circuit

to ext. circuit

can't say

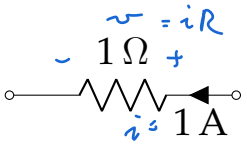


$p = iv = 1 > 0 \Rightarrow$ from ext. ckt

from ext. circuit

to ext. circuit

can't say



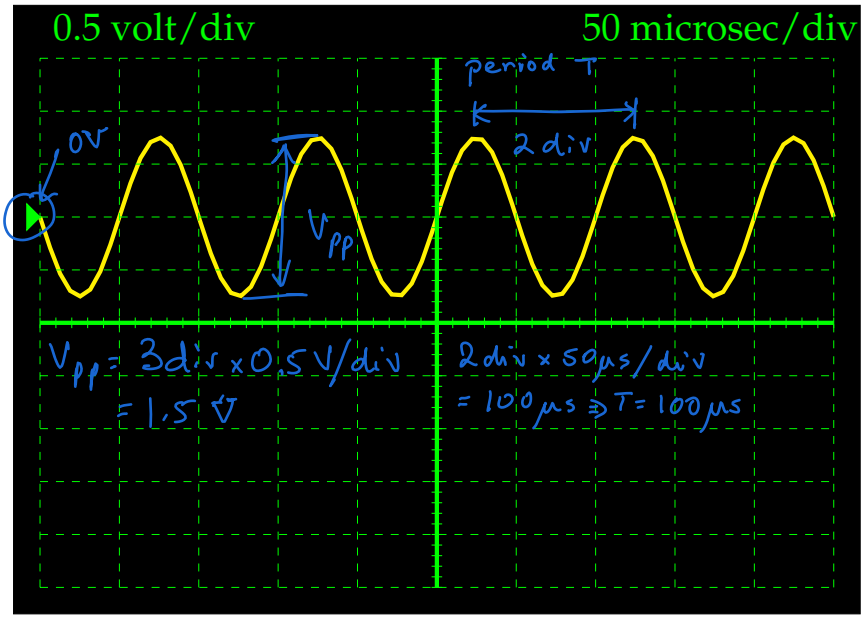
$p = iv = i(iR) = i^2R = 1 > 0$

from ext. circuit

to ext. circuit

can't say

3. Provide the requested information for the voltage-time oscilloscope trace shown below:



What is the period of the signal, with units? 100 μs

What is the frequency of the signal, with units? $f = \frac{1}{T} = \frac{1}{100e\text{-}3} = \frac{1}{1e\text{-}5} = 1e5 = 10\ \text{kHz}$

What is Vpp the peak-to-peak voltage of the signal, with units? 1.5 V

What is the offset of the signal, with units? ground marker ⇒ 0V offset (a bit hard... sorry).