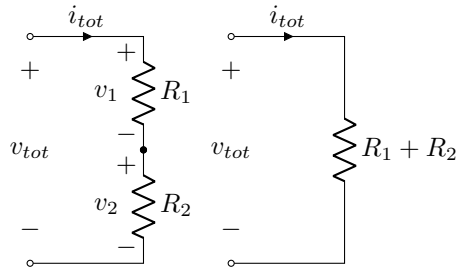


Lecture 10, Feb 2, 2022

Voltage Division

- Consider 2 resistors in series:



- We want to know how the voltage v_{tot} is divided between the two resistors
 - * KVL gives: $v_{tot} = v_1 + v_2$
 - * Ohm's law gives $i_{tot} = \frac{v_1}{R_1} = \frac{v_{tot}}{R_1 + R_2} \implies v_1 = \frac{R_1}{R_1 + R_2} v_{tot}$
- Voltage drop across a resistor in a series circuit is $\frac{R}{R_{tot}}$ times the total voltage drop (note the polarities have to match)
 - If the polarity of the resistor matches the polarity of v_{tot} then the relation works; if it's opposite then we get the voltage negative instead