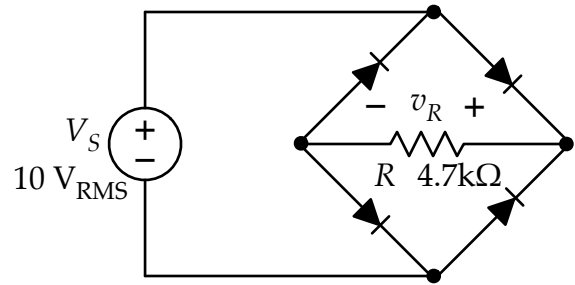


A full-wave rectifier circuit is shown at right. The source is a sinusoidal with a frequency of 60 Hz.



- (a) Use SPICE to simulate the circuit and make a plot of the rectified resistor voltage as a function of time. Use a transient simulation with a sinusoidal source. Run the transient for at least 4 periods (of the source) in order to clearly see the ripple voltage.
- (b) Put a  $100\text{-}\mu\text{F}$  capacitor in parallel with the resistor and re-run the simulation. Make a plot of the voltage across the resistor / capacitor combination. From the plot, determine the ripple voltage. Compare the ripple voltage obtained from the plot to the value calculated using the ripple voltage formula.
- (c) Repeat part (b) but replace the  $100\text{-}\mu\text{F}$  capacitor with a  $33\text{-}\mu\text{F}$  capacitor.