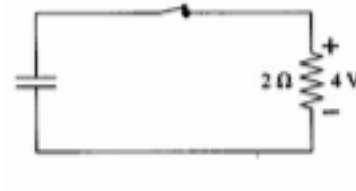


Name: _____

Problem 5: (16) The capacitor in this circuit was initially charged, and then the switch was closed. At this instant of time, the potential difference across the resistor is $\Delta V_R = 4V$.



- a. At this instant of time, what is the current through the resistor? (4)

$$I = V / R = 4V / 2\Omega = 2A$$

- b. At this instant of time, what is the conduction current through the space between the capacitor plates? (4)

$$I_{\text{rough}} = 0$$

- c. At this instant of time, what is the displacement current through the space between the capacitor plates. (4)

$$I_{\text{disp}} = 2A$$

- d. Is the displacement current really a current? If so, what are the moving charges? If not, what is the displacement current? (4)

The displacement current is not a flow of charge but a temporarily changing electric field flux that creates a magnetic field allowing consistency of Maxwell's equations

