



A circuit with two batteries is shown below. The directions of the currents have been chosen (guessed) as shown. Which is the correct current equation for this circuit?















The switch S is initially at position "a" for a long time. It is then switched to position "b". Describe what happens to the light bulb as a function of time after the switch is flipped from "a" to "b".



- A) The light bulb goes on but goes off immediately.
- B) The light bulb goes off and stays off.
- C) The light bulb goes on but its brightness decreases with time and eventually goes off.
- D) The light bulb goes on and stays on at a constant brightness.
- E) The light bulb goes on but its brightness increases with time.

In the circuit shown below, the switch is initially closed (and has been closed for a long time) and the bulb glows brightly. When the switch is opened, what happens to the brightness of the bulb?



- A) The brightness of the bulb is not affected.
- B) The bulb gets dimmer.
- C) The bulb gets brighter.
- D) The bulb initially brightens, then dims.
- E) The bulb initially dims, then brightens.











An RC circuit is shown below. Initially the switch is open and the capacitor has no charge. At time t = 0, the switch is closed. What is the voltage across the capacitor immediately after the switch is closed (time $t = 0 + \epsilon$)?









