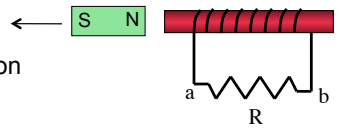
Problem 31.20



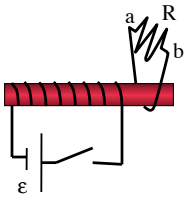
a.) What is the induced current's direction when the magnetic is pulled to the left?

--external field to right:

--magnetic flux decreasing:

--so induced B-fld (due to induced current) will be "with" external field, or to the right

--a current from "a" to "b" across the resistor produces an induced current to right in coil (cupped-right-hand rule with thumb pointed to right).



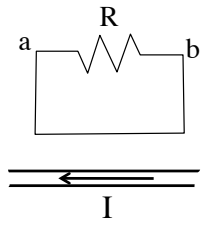
b.) Does the induced current through the resistor go from "a" to "b" or vice versa, just after the switch is thrown?

--external field down solenoid axis to left:

--external (solenoid) magnetic flux increasing:

--so induced B-fld (due to induced current) will be "against" external field, or to the right.

--a current from "a" to "b" across the resistor produces an induced current to right in coil (cupped-right-hand rule with thumb pointed to right).



c.) With the current *I* dropping fast:

--"I" is producing a magnetic field that is directed INTO the age across the area of the circuit.

--as "I" drops, the magnetic flux decreases;

--a dropping external magnetic flux will motivate an induced current whose magnetic field is in the *same direction* as the external field.

--a current from "a" to "b" generates the appropriate induced B-field.