**Problem 6.1** The switch in the bottom loop of Fig. P6.1 is closed at $t = 0$ and then opened at a later time $t_1$. What is the direction of the current $I$ in the top loop (clockwise or counterclockwise) at each of these two times?

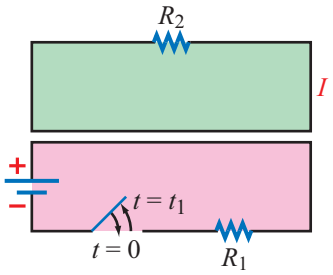


**Figure P6.1:** Loops of Problem 6.1.

**Solution:** The magnetic coupling will be strongest at the point where the wires of the two loops come closest. When the switch is closed the current in the bottom loop will start to flow clockwise, which is from left to right in the top portion of the bottom loop. To oppose this change, a current will momentarily flow in the bottom of the top loop from right to left. Thus the current in the top loop is momentarily clockwise when the switch is closed. Similarly, when the switch is opened, the current in the top loop is momentarily counterclockwise.