Experimental Problem

Apparatus: dc source, ammeter, voltmeter, rheostat (coil of high resistance wire with sliding contact), and connecting wires.

Problem: Construct appropriate circuit and establish the dependence of the electric power P dissipated in the rheostat as a function of the current I supplied by the dc source.

1. Make a plot of P versus I.
2. Find the internal resistance of the dc source.
3. Determine the electromotive force E of the source.
4. Make a graph of the electric power P versus resistance R of the rheostat.
5. Make a graph of the total power P_{tot} dissipated in the circuit as a function of R.
6. Make a graph of the efficiency η of the dc source versus R.