11 EMF; Electric Power

11.1 Book Notes

- For a conductor to have a steady current, it must be part of a path that forms a closed loop (or a complete circuit).
- A battery is not a current source — You might have thought that a battery or other source of emf always produces the same current, no what circuit it's used in. $\mathcal{E} - Ir = IR \implies I = \frac{\mathcal{E}}{R+r}$ says it isn't so. The greater the resistance R of the external circuit the less the current the source will produce.

11.2 Recitation

- Rate of energy conversion: $P = I\mathcal{E}$
- Energy lost $P = I^2 r_1$
- Total power supplied $P = I\mathcal{E}_1 - I^2 r_1$