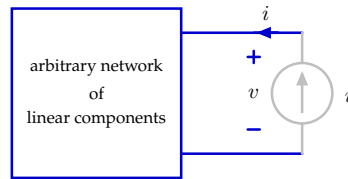For any linear network containing only voltage sources, current sources, and resistors, the relationship between i and v at any pair of terminals will be a straight line in the v-i plane. To see this, consider connecting an independent current source to the circuit and analyzing with superposition to find the relationship between i and v:

The solution for v will always have the following form:

$$v = \underbrace{\sum_m \alpha_m V_m}_{\substack{\text{one term for each} \\ \text{internal independent VSrc}}} + \underbrace{\sum_k \beta_k I_k}_{\substack{\text{one term for each} \\ \text{internal independent ISrc}}} + \underbrace{R_{\text{eq}}}_{\substack{\text{equivalent resistance with} \\ \text{all internal sources zeroed out}}} \times i$$

This relationship holds *regardless of what is connected to those terminals*.

We can replicate this relationship with either of two relatively-simple networks:

10mA ⟋ 12kΩ 6kΩ 2kΩ

1kΩ

2kΩ

1mA

2kΩ

1V