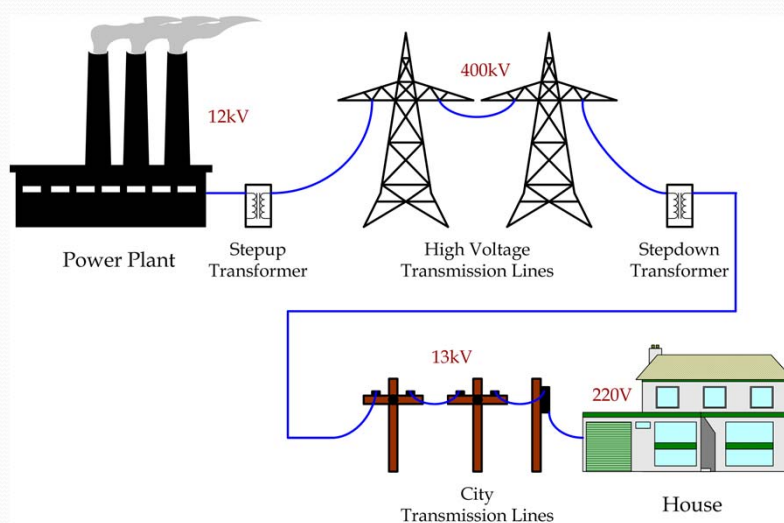


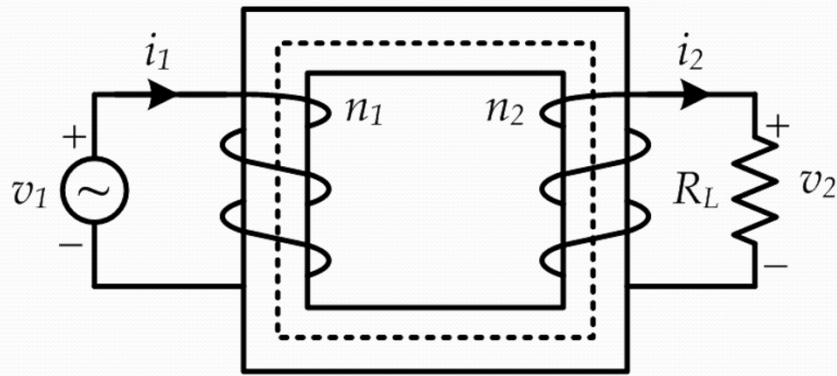
Transformer Circuits

Section 08

Power Transmission



Ideal Transformer



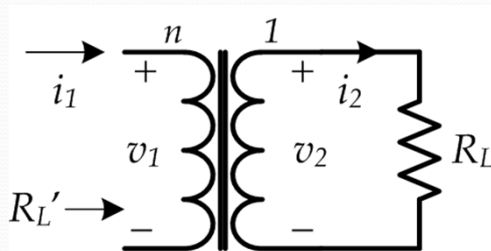
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Ideal Transformer Equations

$$\begin{aligned} v_2 &= \frac{v_1}{n} \\ i_2 &= n \times i_1 \\ R_L' &= n^2 \times R_L \\ \hline P_1 &= P_2 \end{aligned}$$

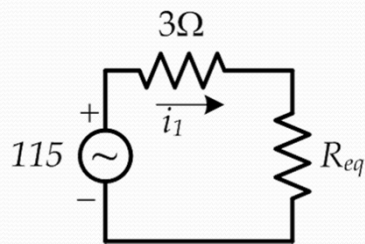
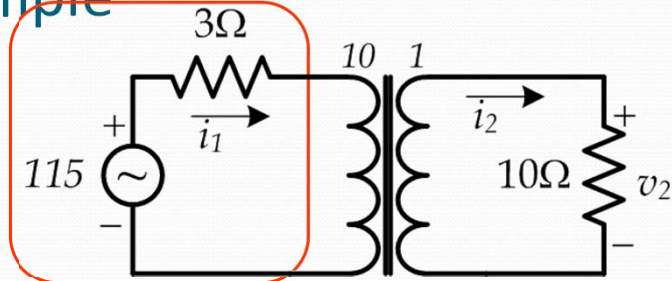


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Example



$$R_{eq} = \left(\frac{10}{1}\right)^2 \times 10 = 1000\Omega$$

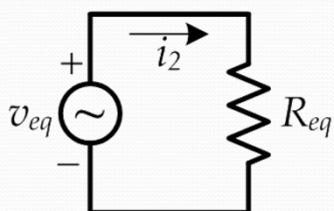
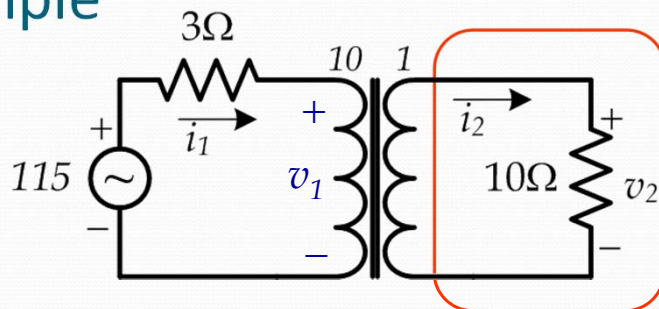
$$i_1 = \frac{115}{3 + 1000} = 0.1147\text{ A}$$

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Example



$$v_1 = 115 - i_1 \times 3 = 114.7\text{ V}$$

$$v_2 = \frac{1}{10} \times v_1 = 11.47$$

$$i_2 = \frac{11.47}{10} = 1.147\text{ A}$$

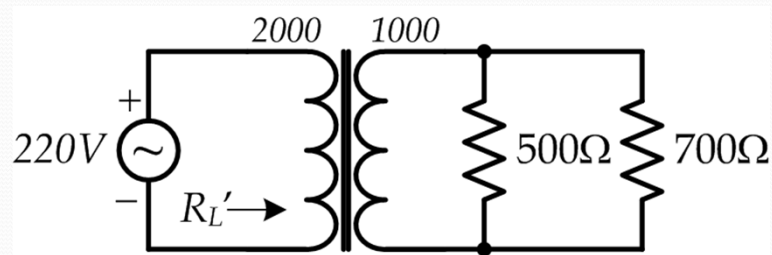
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Process Check

- turn ratio of 2000:1000
- Loads: 500Ω and 700Ω .
- What does the source see?



Ideas to solve it?!