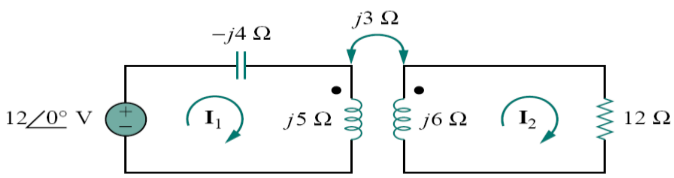
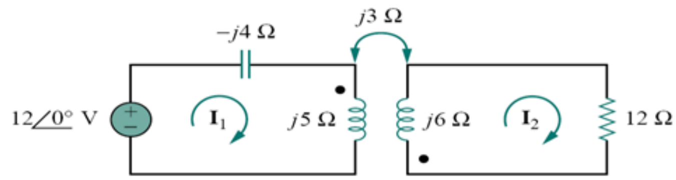
Linear Transformer “Dot” Rule:

> If a current enters the dotted terminal of one coil, the reference polarity of the mutual voltage in the second coil is positive at the dotted terminal of the second coil.

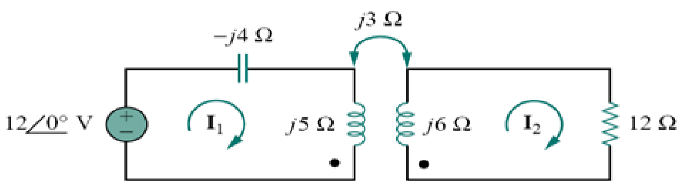
Complete the two mesh equations for each circuit:



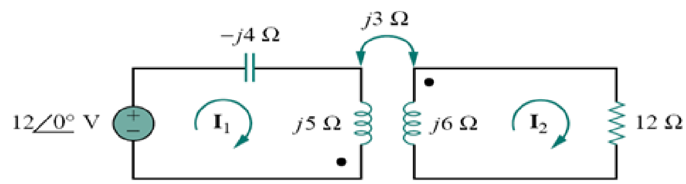
−12 − 4j I1 + 5j I1 ___________ = 0
6j I2 + 12 I2 ________________ = 0



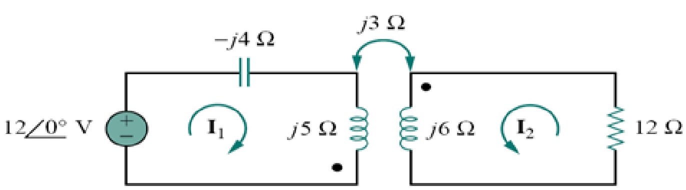
−12 − 4j I1 + 5j I1 ___________ = 0
6j I2 + 12 I2 ________________ = 0



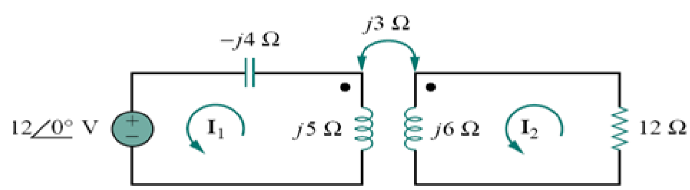
−12 − 4j I1 + 5j I1 ___________ = 0
6j I2 + 12 I2 ________________ = 0



−12 − 4j I1 + 5j I1 ___________ = 0
6j I2 + 12 I2 ________________ = 0

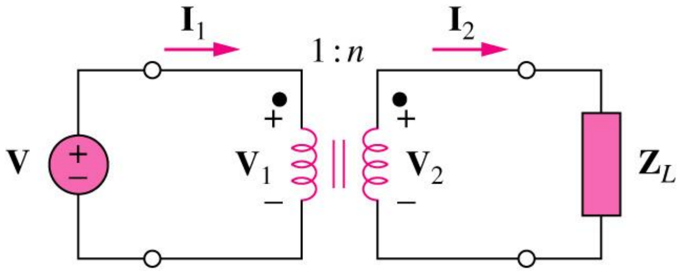


−12 − 4j I1 + 5j I1 ___________ = 0
6j I2 + 12 I2 ________________ = 0

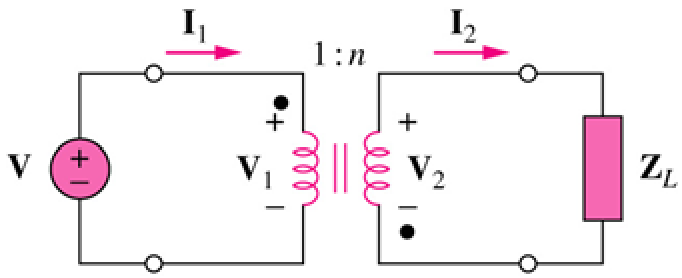


12 − 4j I1 + 5j I1 ___________ = 0
6j I2 + 12 I2 ________________ = 0

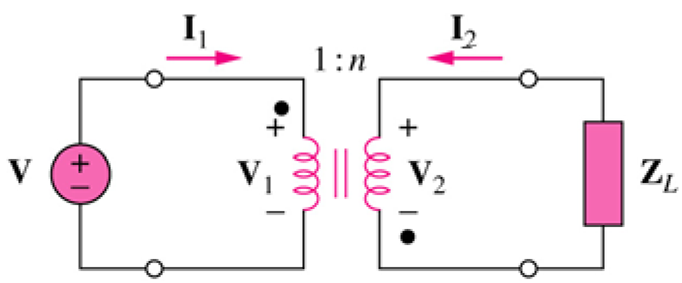
Ideal Transformer “Dot” Rule:



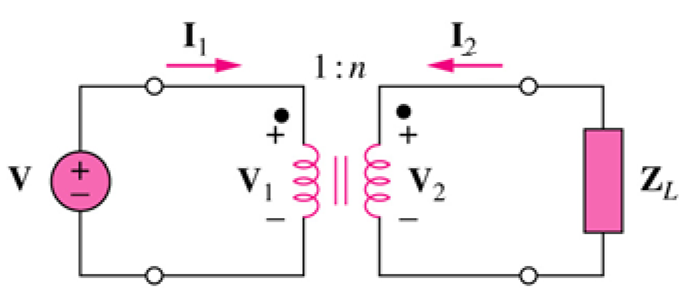
$$\frac{\mathbf{V}_2}{\mathbf{V}_1} = \frac{N_2}{N_1} = n \qquad \frac{\mathbf{I}_2}{\mathbf{I}_1} = \frac{N_1}{N_2} = \frac{1}{n}$$



$$\frac{\mathbf{V}_2}{\mathbf{V}_1} = -\frac{N_2}{N_1} = -n \qquad \frac{\mathbf{I}_2}{\mathbf{I}_1} = -\frac{N_1}{N_2} = -\frac{1}{n}$$



$$\frac{\mathbf{V}_2}{\mathbf{V}_1} = -\frac{N_2}{N_1} = -n \qquad \frac{\mathbf{I}_2}{\mathbf{I}_1} = \frac{N_1}{N_2} = \frac{1}{n}$$



$$\frac{\mathbf{V}_2}{\mathbf{V}_1} = \frac{N_2}{N_1} = n \qquad \frac{\mathbf{I}_2}{\mathbf{I}_1} = -\frac{N_1}{N_2} = -\frac{1}{n}$$