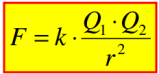
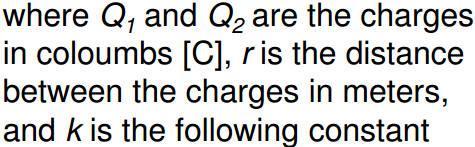
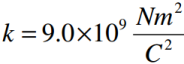
**Charge & Force**

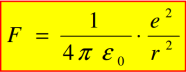






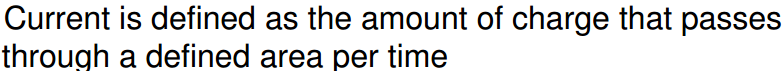


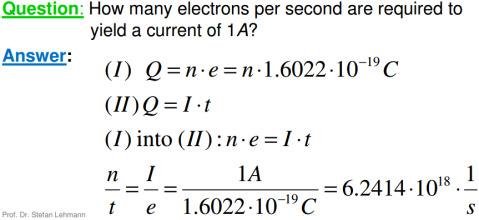
e^2 – instead of Q1\*Q2

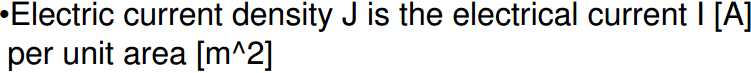
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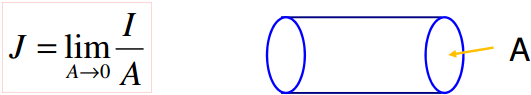
**Current**

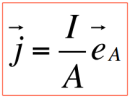
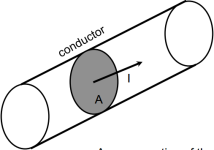
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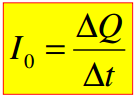
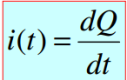
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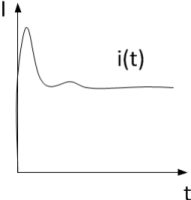
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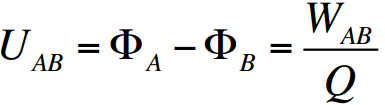
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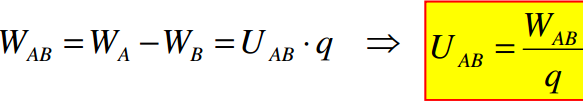
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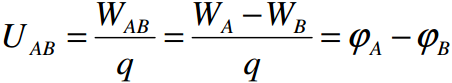
 

**Voltage and Electrical Potential**

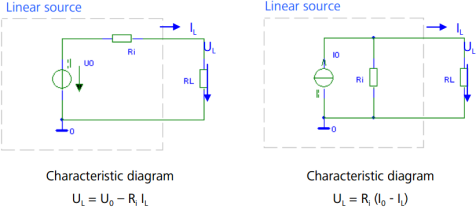
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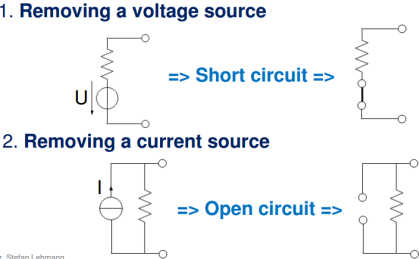
**Voltage(left) and current(right) source with internal resistance**

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**Voltage Divider Rule**

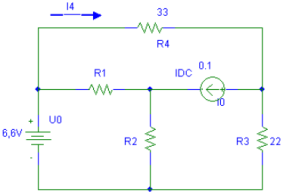
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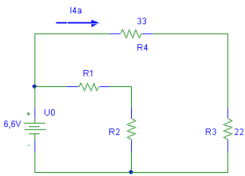
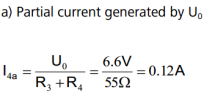
**Superposition**

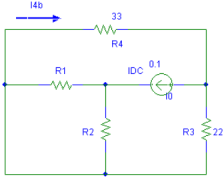
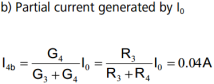
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**Example:**

**Find i4 through the R4 by superposition:**

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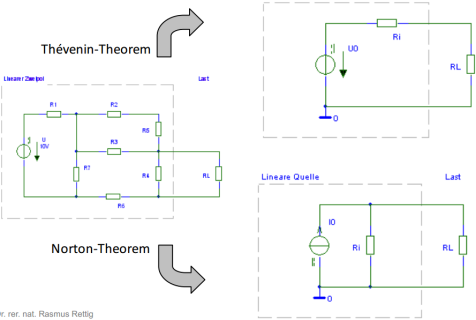
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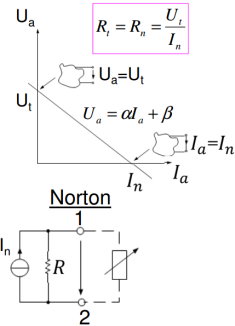
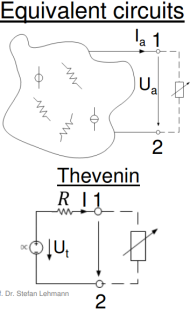
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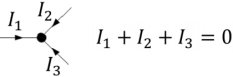
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**Norton (linear voltage source), Thevenin (lin. current source)**

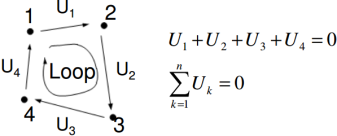
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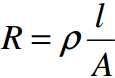
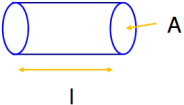
**Kirchhoff’s Current Law (KCL)**

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**Kirchhoff’s Voltage Law (KVL)**

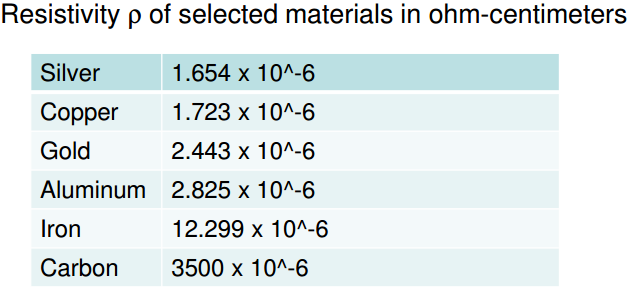
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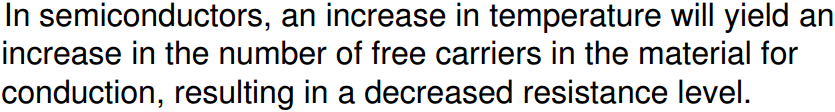
**Resistance and Resistivity**

** **

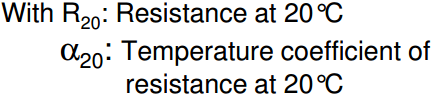
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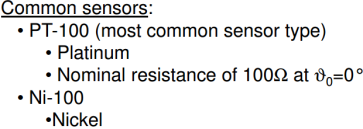
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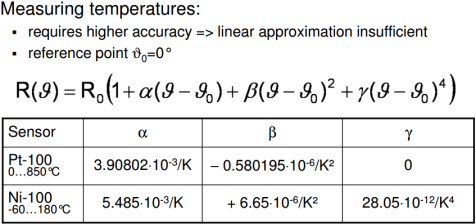
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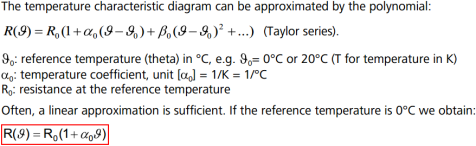
**Resistance (Temperature dependency)**

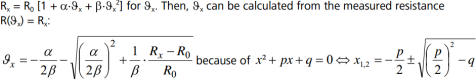
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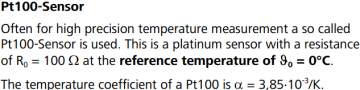
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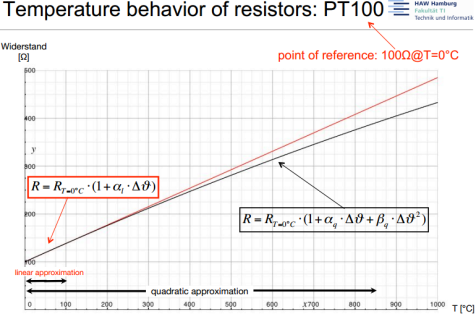
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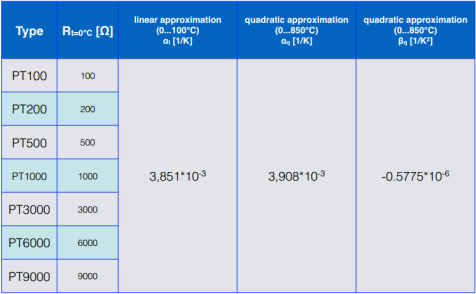
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**Answer:**

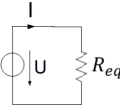
**PT-100: close to linear**

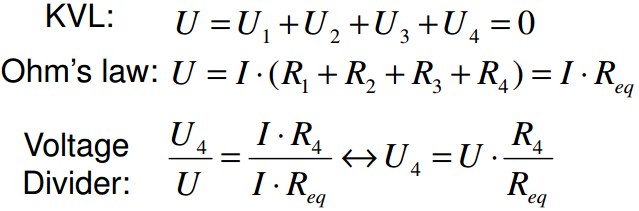
**Ni-100: lighter sensitivity**

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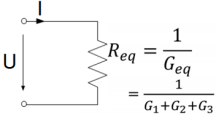
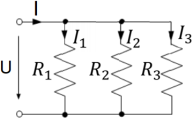
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**Series Resistances**

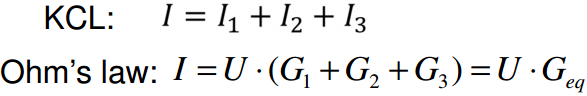
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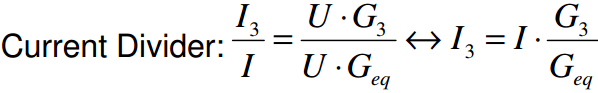
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**Parallel Resistances**

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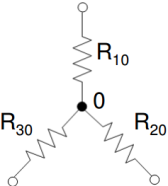
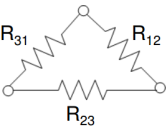
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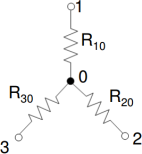
**-Y Transform**



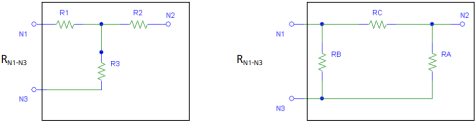
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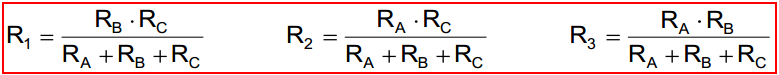
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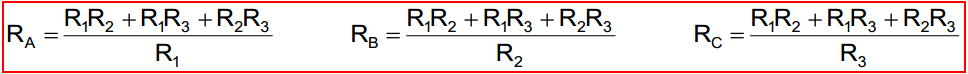
**Y- Transform**

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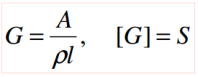
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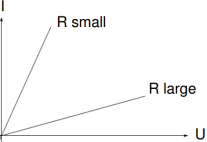
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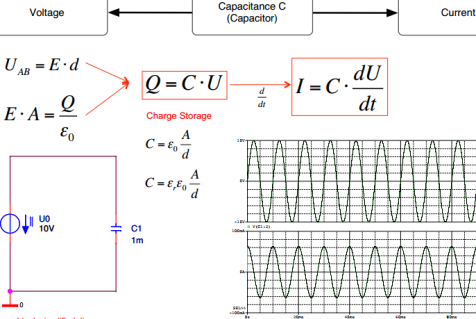
**Conductance**

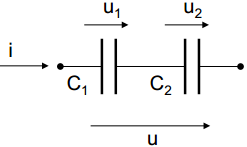
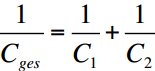
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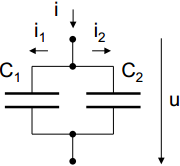
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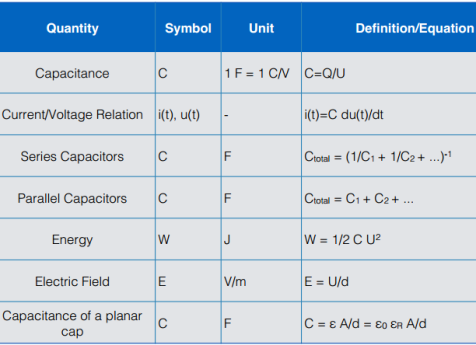
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**Capacitance (C)**

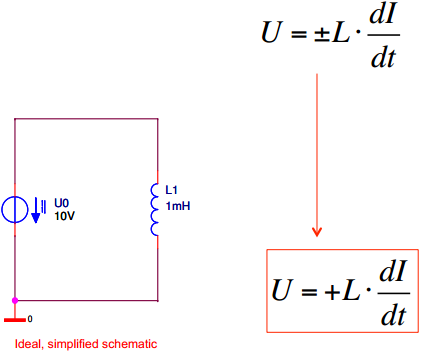
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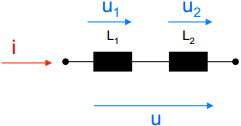
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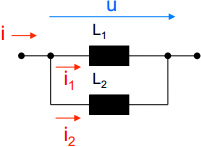
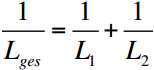
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**Inductance (L)**

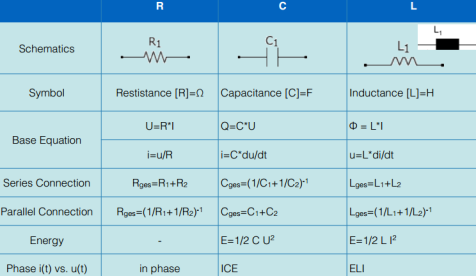
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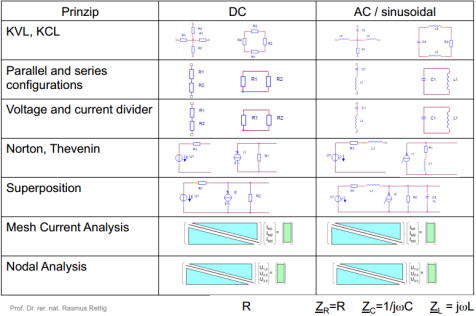
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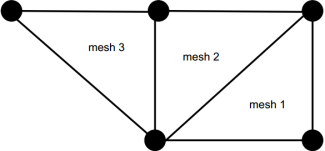
**R, L, C**

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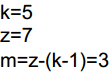
**Methods DC -> AC**

****

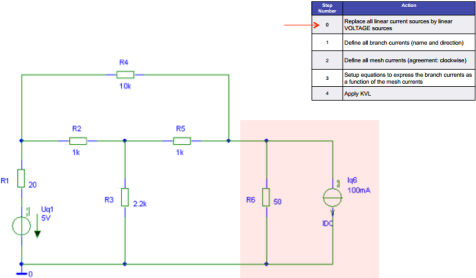
**Nodes, Branches and Meshes**

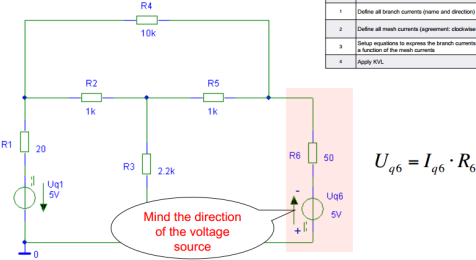
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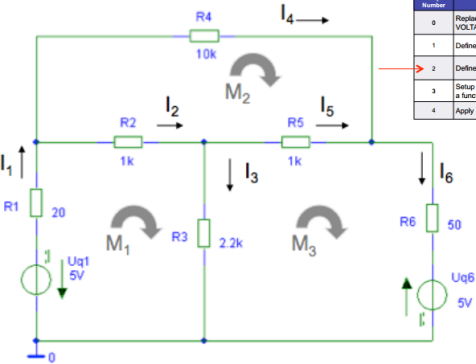
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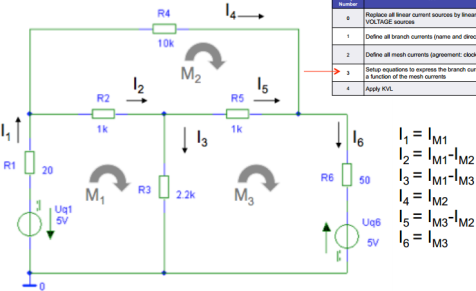
**Mesh Current Analysis(Rettig)**

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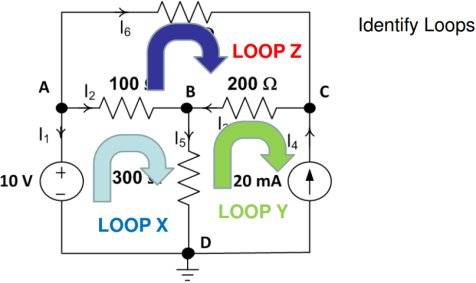
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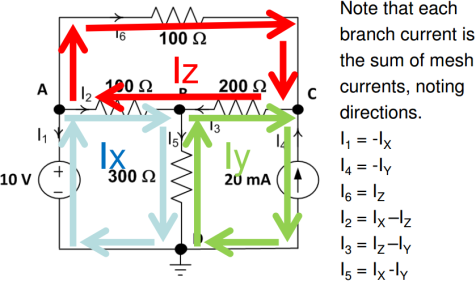
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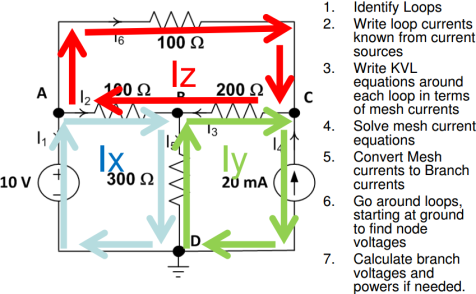
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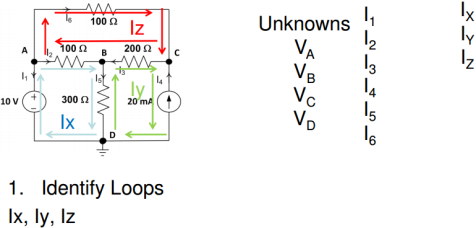
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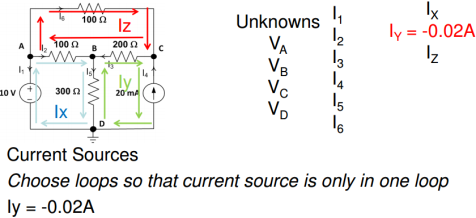
**Mesh Current Anal. (Lehmann)**

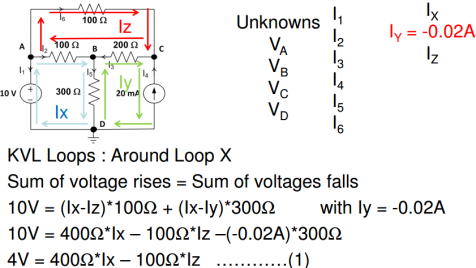
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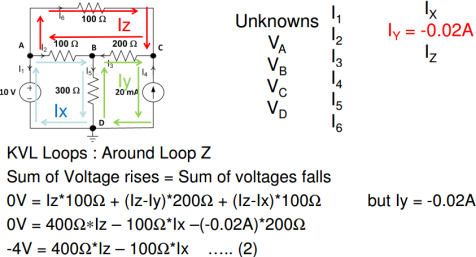
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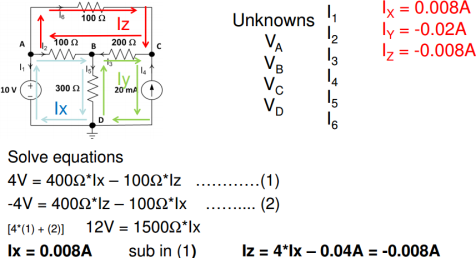
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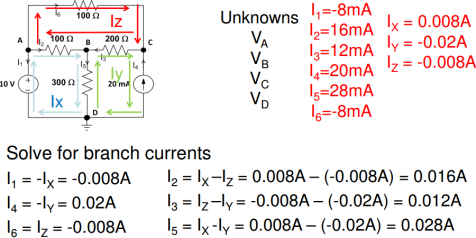
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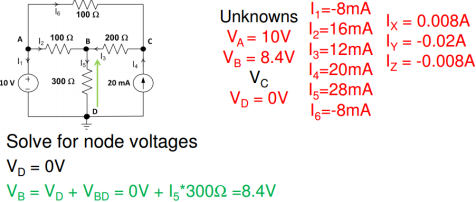
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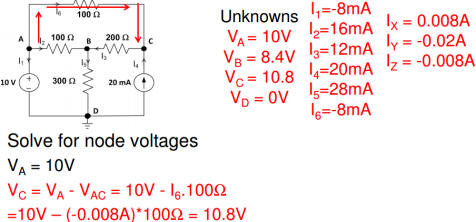
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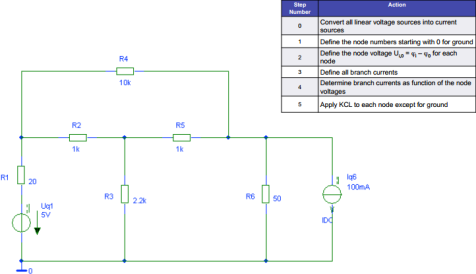
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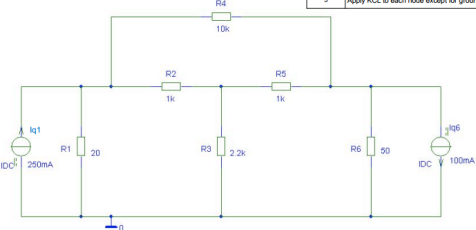
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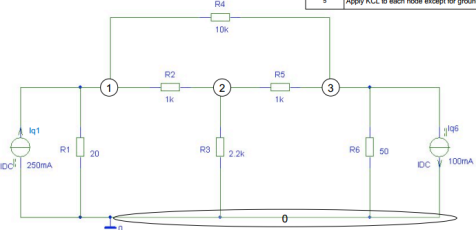
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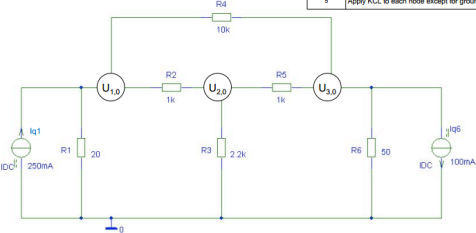
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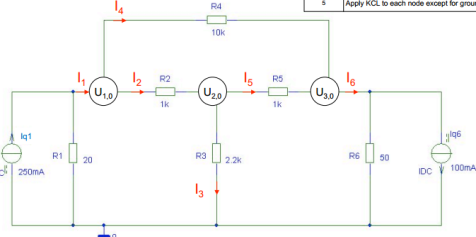
**Node Voltage Analysis (Rettig)**

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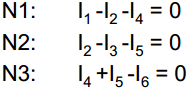
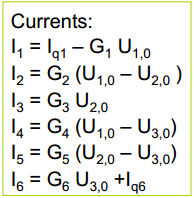
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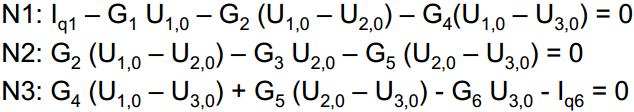
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**(N1, N2 and N3)**

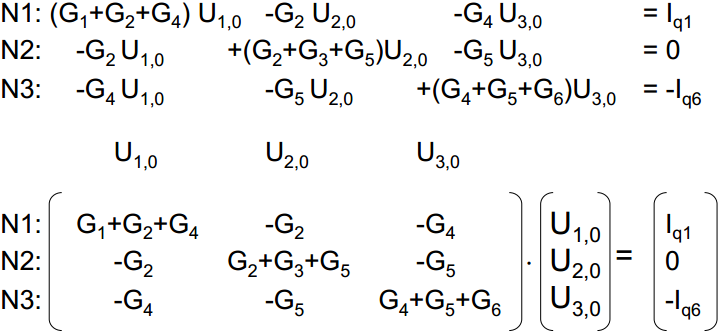
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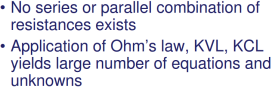
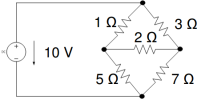
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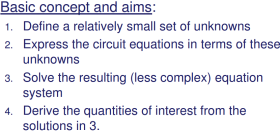
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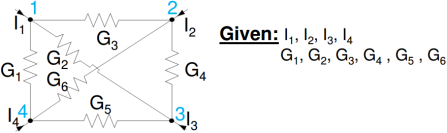
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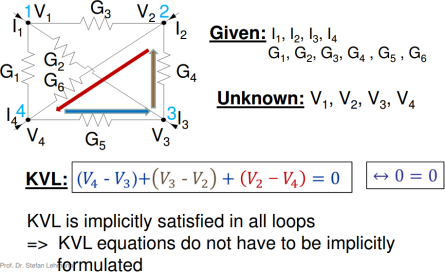
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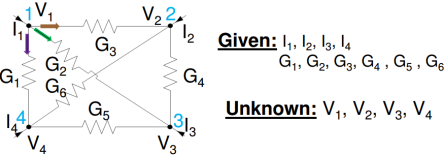
**Nodal Analysis (Lehmann)**

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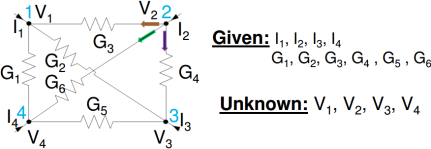
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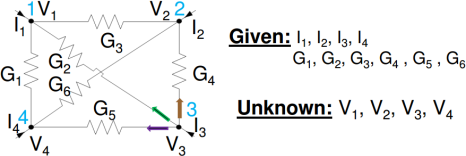
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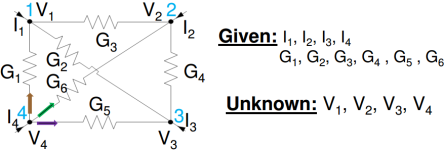
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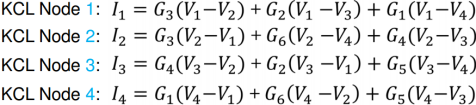
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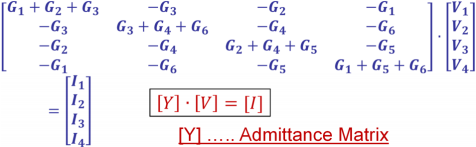
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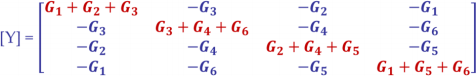
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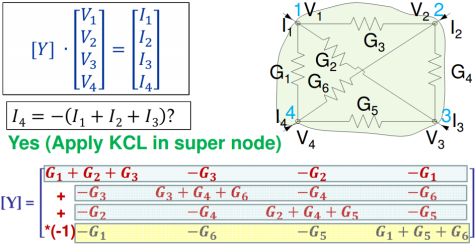
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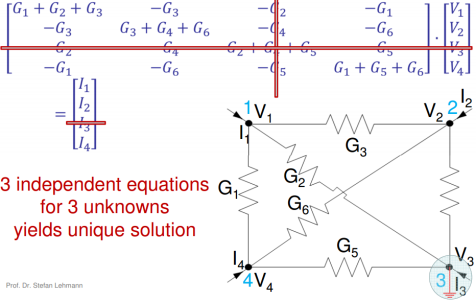
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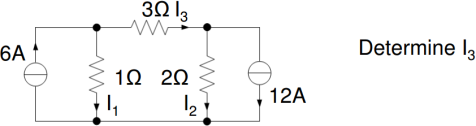
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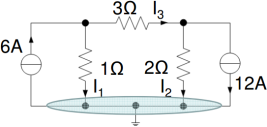
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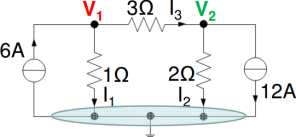
**Step-by-Step Example (Nodal An.)**

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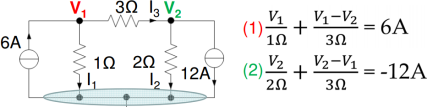
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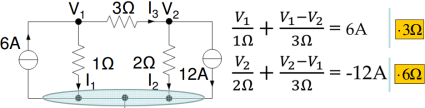
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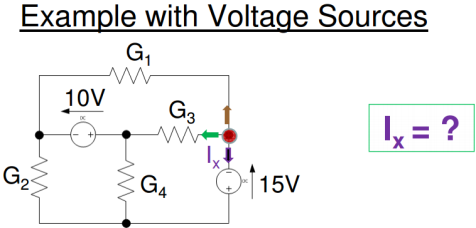
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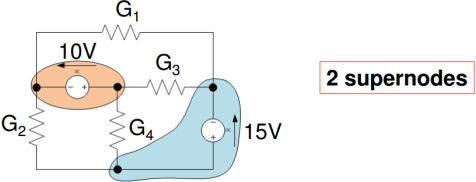
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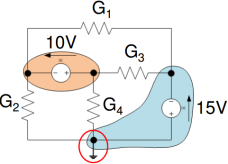
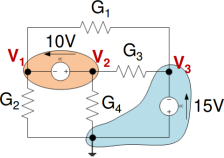
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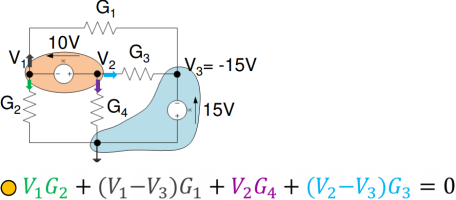
**Two Special Cases:**

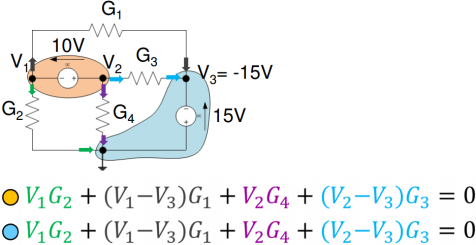
** **

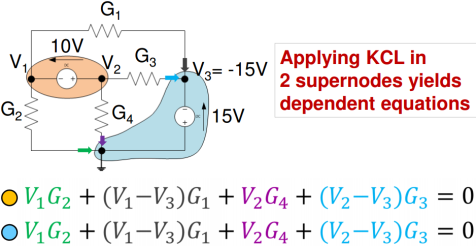
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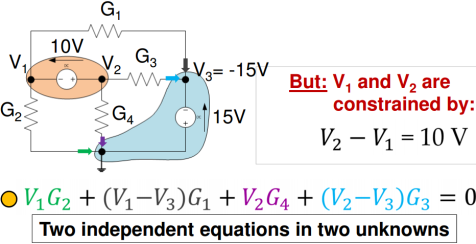
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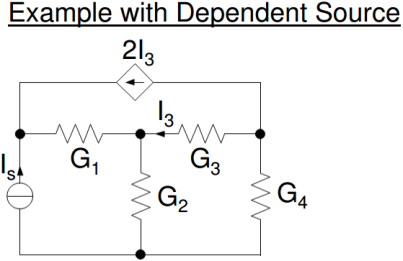
** **

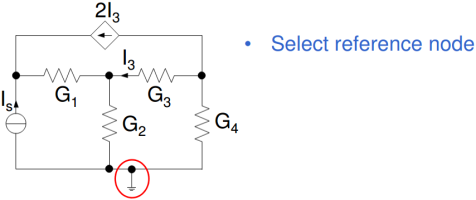
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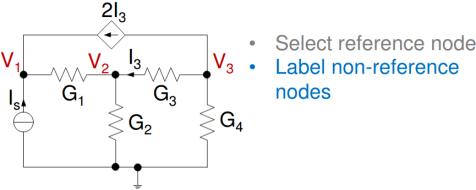
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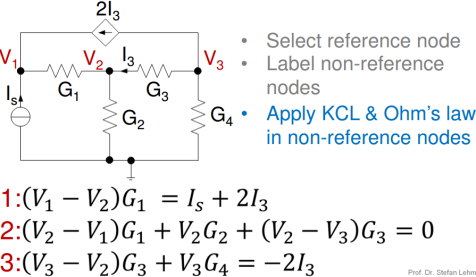
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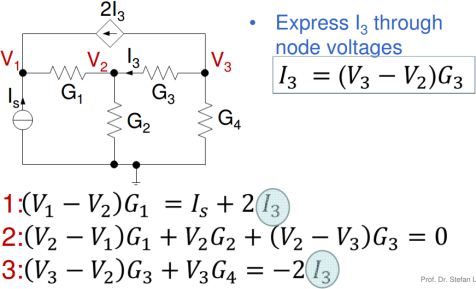
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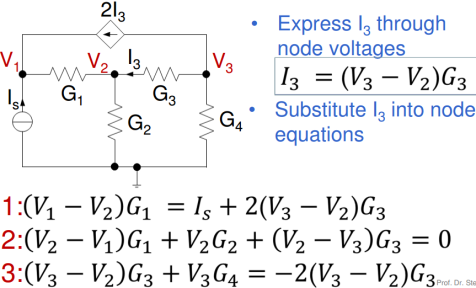
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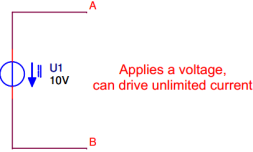
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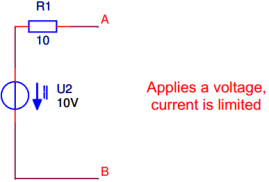
**Then solve node equations**

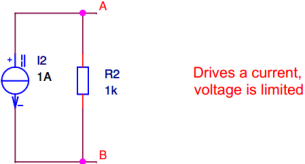
**Ideal DC source**

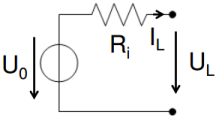
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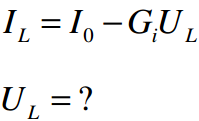
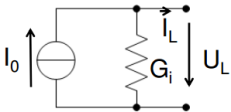
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**Linear/Real DC source**

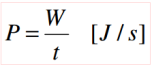
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**Power**

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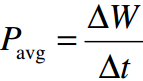
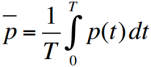
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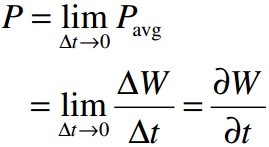
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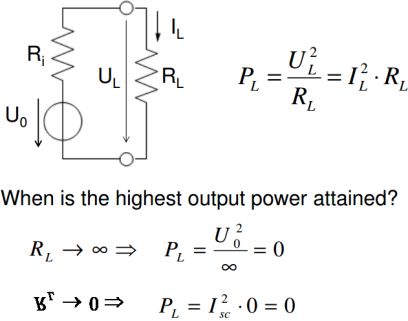
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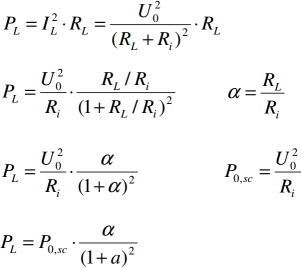
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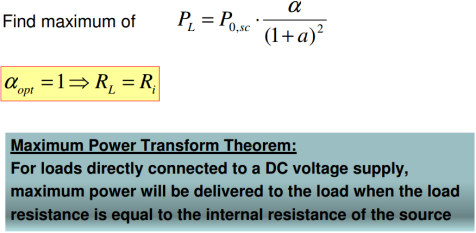
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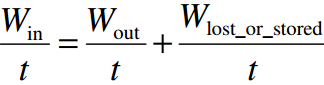
**Maximum Power Transfer**

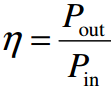
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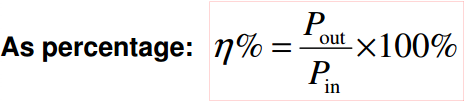
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**Efficiency **

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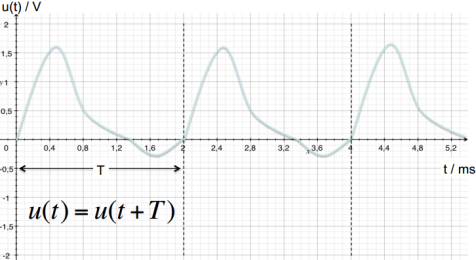
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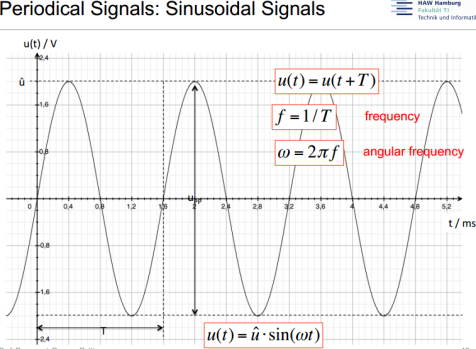
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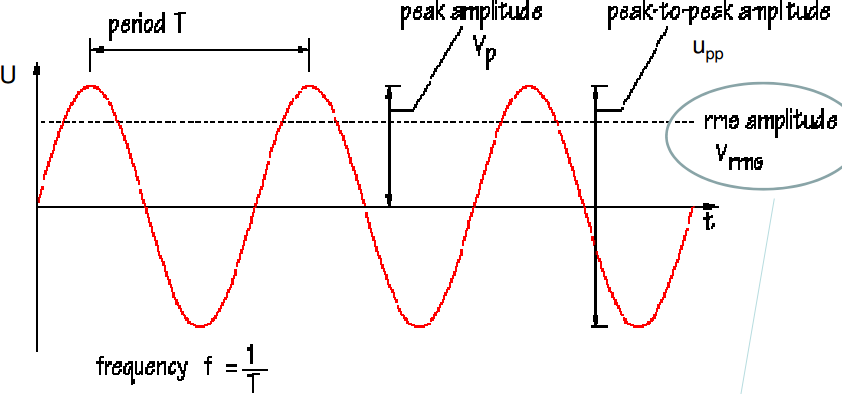
**Frequency (+angular freq.)**

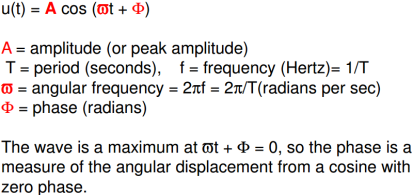
**Cycle Time T**

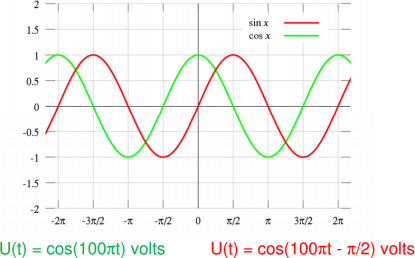
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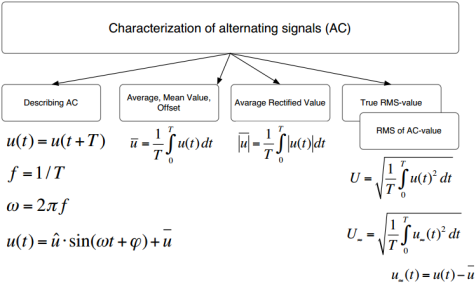
**(there’s a hidden T in 0-1.6)**

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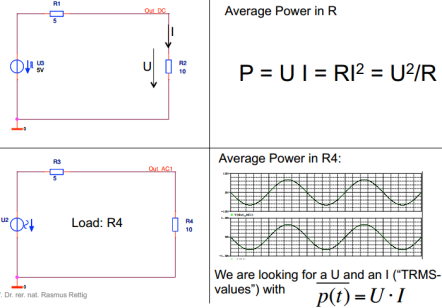
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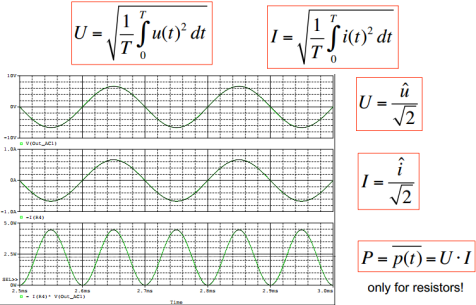
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**AC (Alternating Signals)**

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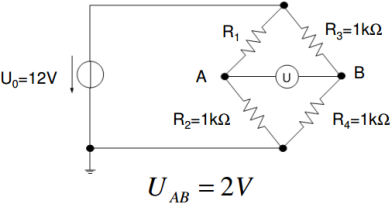
**True RMS value (root-mean-square)**

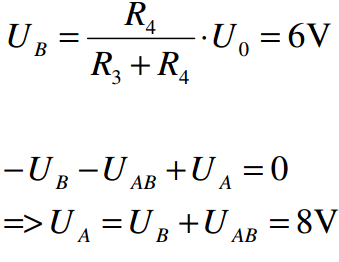
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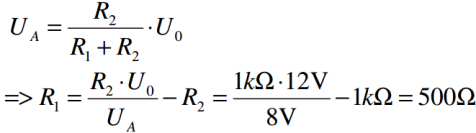
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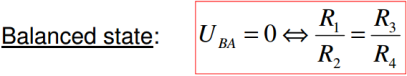
**Wheatstone Bridge**

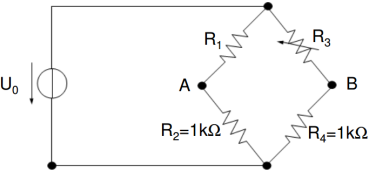
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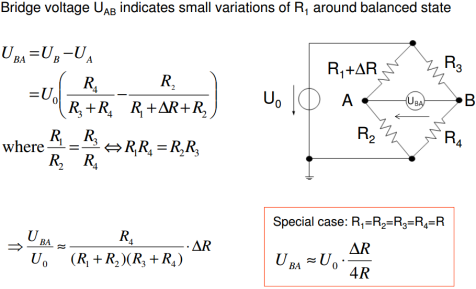
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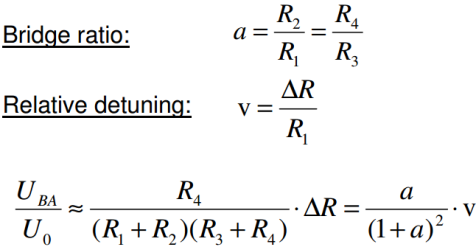
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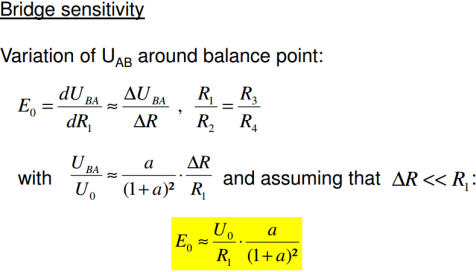
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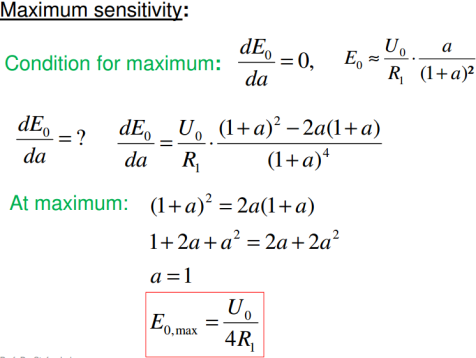
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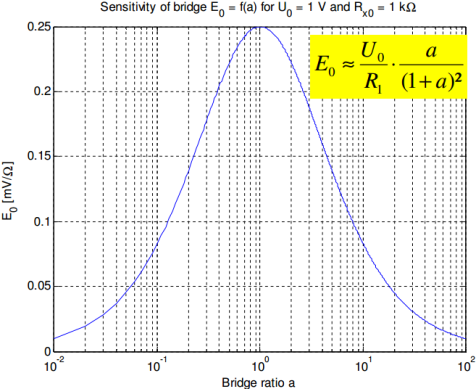
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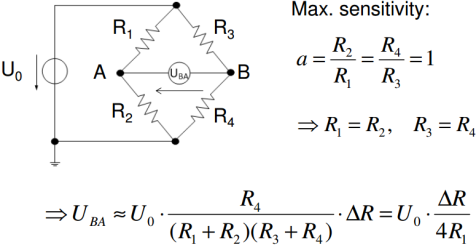
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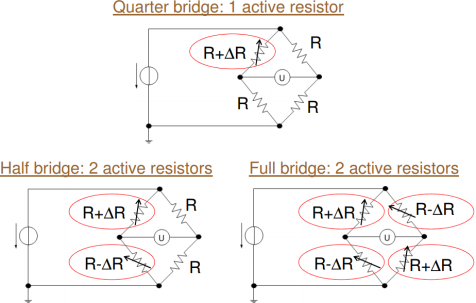
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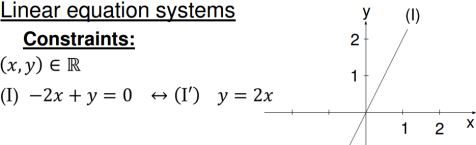
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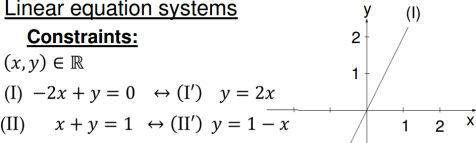
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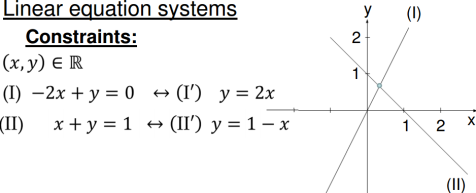
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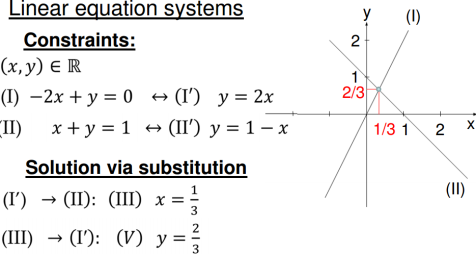
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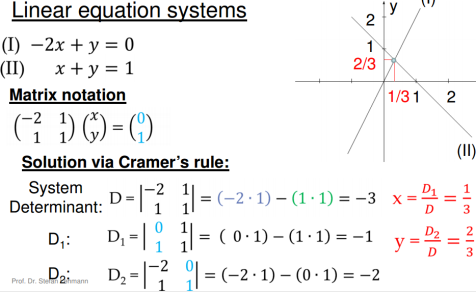
**Linear Equation Systems**

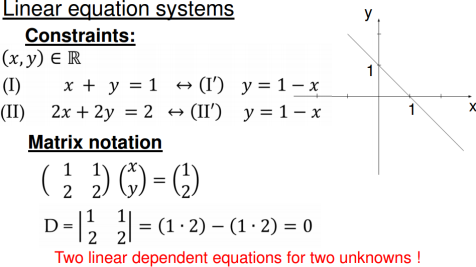
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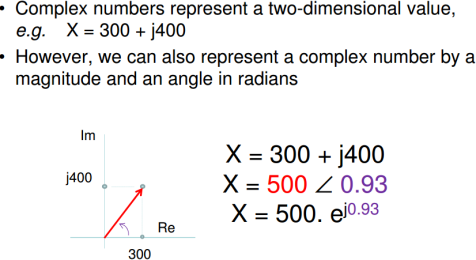
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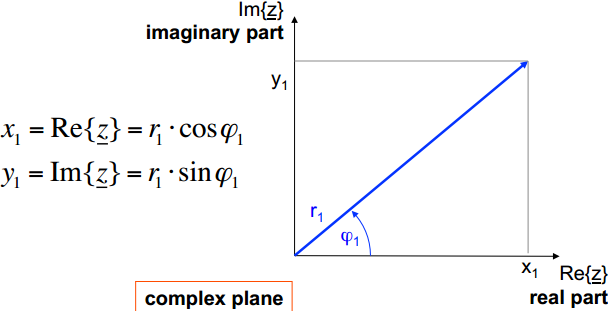
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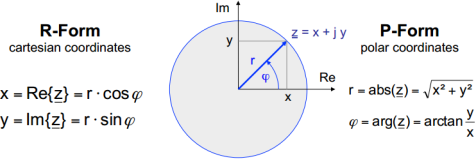
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**Complex Numbers**

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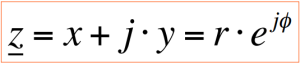
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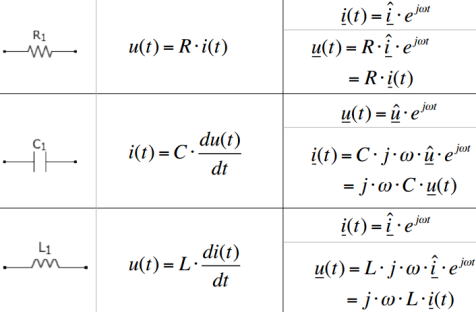
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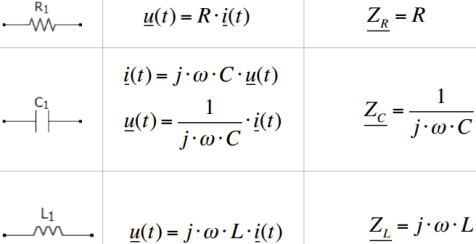
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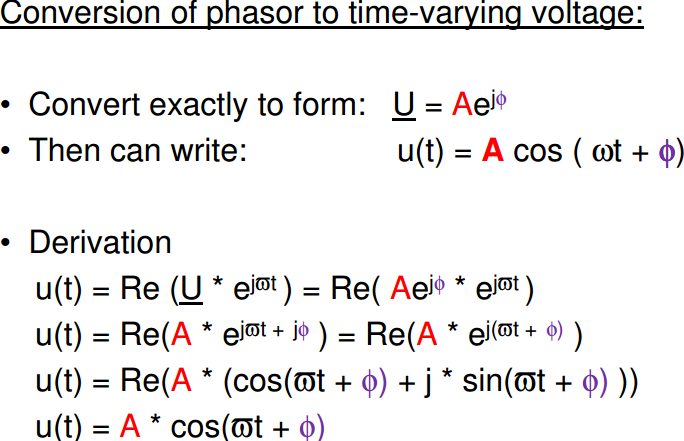
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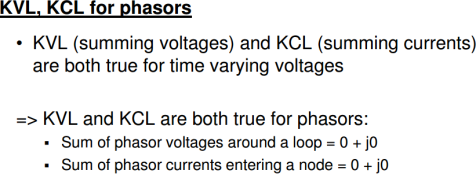
**Phasors**

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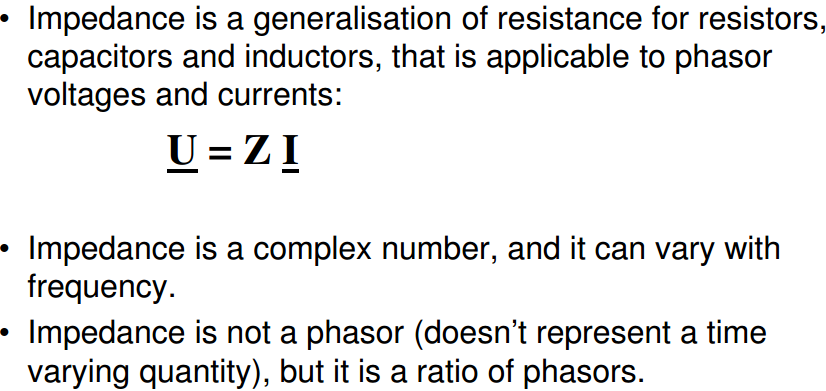
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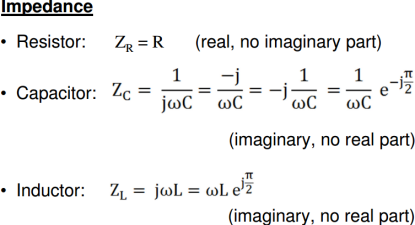
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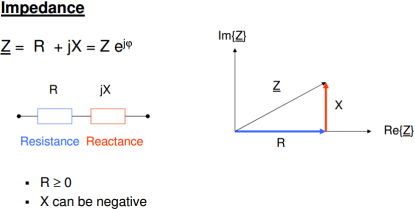
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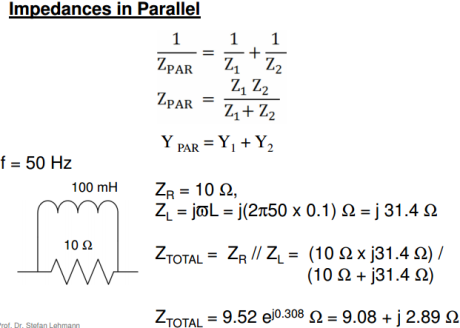
**Impendance**

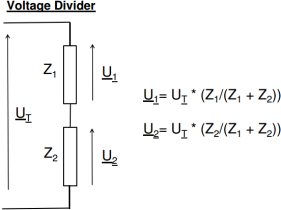
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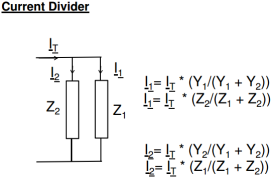
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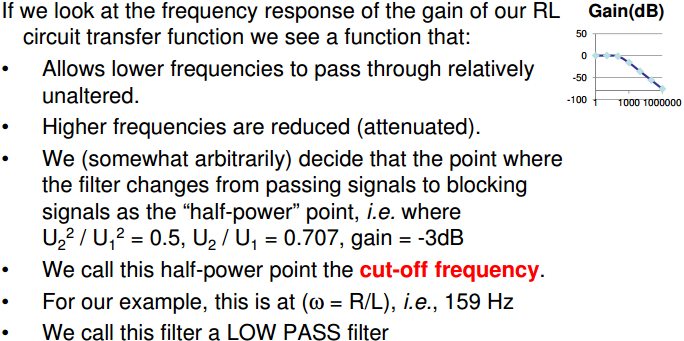
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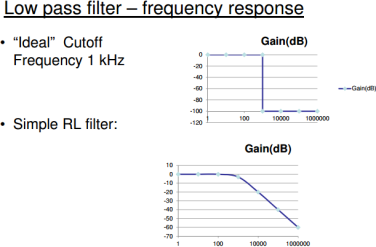
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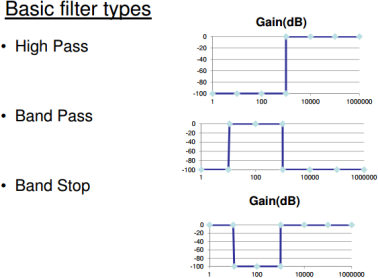
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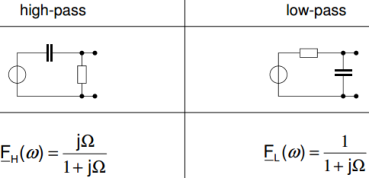
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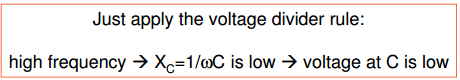
**Filters**

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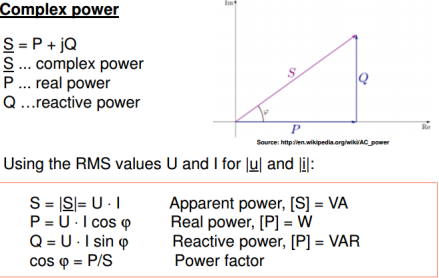
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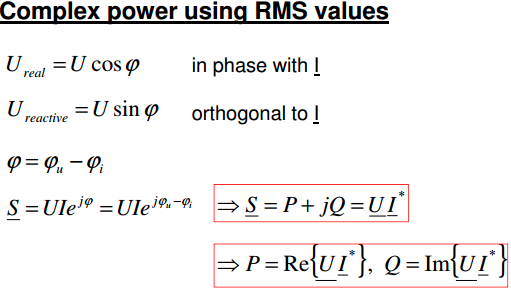
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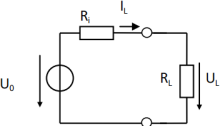
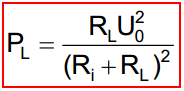
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**Complex Power**

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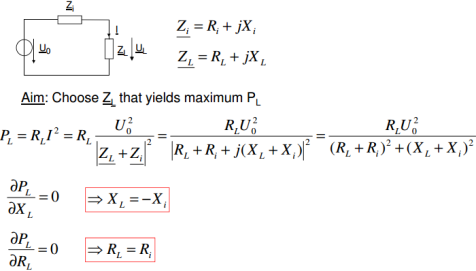
**Power Matching (DC)**

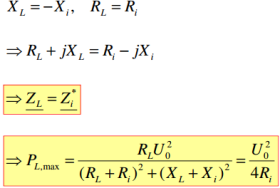
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**Power Matching (AC)**

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