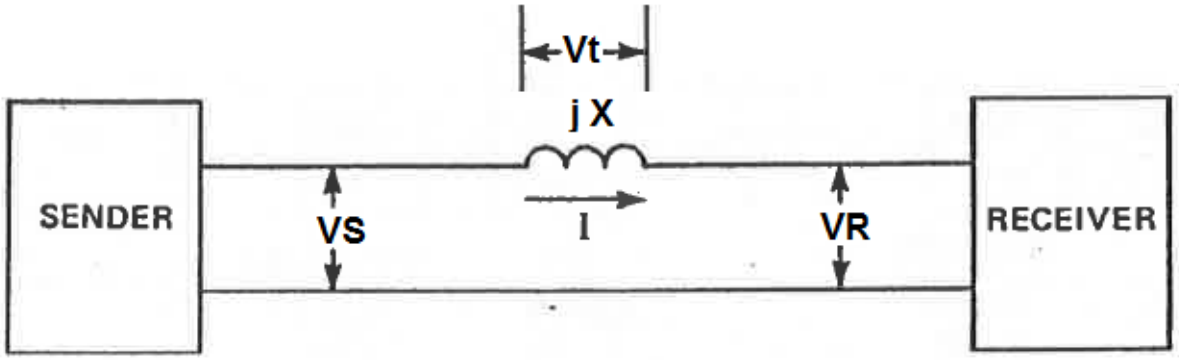
LAB6 - Power Flow Between 2 Sources



1 SENDER AND RECEIVER VOLTAGES UNEQUAL BUT IN PHASE

2 SENDER AND RECEIVER VOLTAGES EQUAL BUT OUT OF PHASE

3 SENDER AND RECEIVER VOLTAGES UNEQUAL AND OUT OF PHASE

$VmS := 30000$ $\theta S := 10$ deg $\theta R := 0$ $Zt := 0 + i \cdot 100$ Line Impedance

$VmR := 25000$

try to change

$VS := VmS \cdot e^{i \cdot \theta S \cdot \frac{\pi}{180}} = 29544.2326 + 5209.4453 i$ $|VS| = 30000$ $\arg(VS) \cdot \frac{180}{\pi} = 10$ deg

$VR := VmR \cdot e^{i \cdot \theta R \cdot \frac{\pi}{180}} = 25000$ $|VR| = 25000$ $\arg(VR) \cdot \frac{180}{\pi} = 0$ deg

$Vt := VS - VR = 4544.2326 + 5209.4453 i$

$|Vt| = 6912.9133$ $\arg(Vt) \cdot \frac{180}{\pi} = 48.9016$

$I := \frac{VS - VR}{Zt} = 52.0945 - 45.4423 i$ $|I| = 69.1291$ $\arg(I) \cdot \frac{180}{\pi} = -41.0984$

$SS := VS \cdot (Re(I) - i \cdot Im(I)) = 1.3024 \cdot 10^{6} + 1.6139 \cdot 10^{6} \cdot i$ Complex Power at Sender

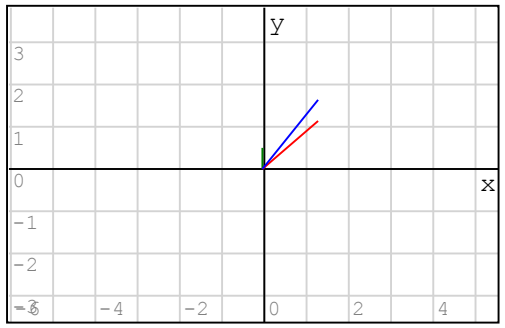
$SR := VR \cdot (Re(I) - i \cdot Im(I)) = 1.3024 \cdot 10^{6} + 1.1361 \cdot 10^{6} \cdot i$ Complex Power at Receiver

$St := (VS - VR) \cdot (Re(I) - i \cdot Im(I)) = 4.7788 \cdot 10^{5} \cdot i$ Complex Power in the Line

$pSS := Re(SS) = 1.302361 \cdot 10^{6}$ $pSt := Re(St) = 0$ $pSR := Re(SR) = 1.302361 \cdot 10^{6}$

$qSS := Im(SS) = 1.613942 \cdot 10^{6}$ $qSt := Im(St) = 4.778837 \cdot 10^{5}$ $qSR := Im(SR) = 1.136058 \cdot 10^{6}$

$$S := \begin{bmatrix} 0 & 0 \\ \frac{pSS}{10^{6}} & \frac{qSS}{10^{6}} \end{bmatrix} \quad R := \begin{bmatrix} 0 & 0 \\ \frac{pSR}{10^{6}} & \frac{qSR}{10^{6}} \end{bmatrix} \quad t := \begin{bmatrix} 0 & 0 \\ \frac{pSt}{10^{6}} & \frac{qSt}{10^{6}} \end{bmatrix}$$



S
R
t