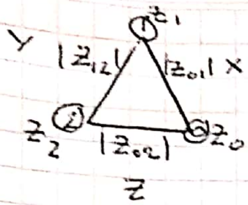
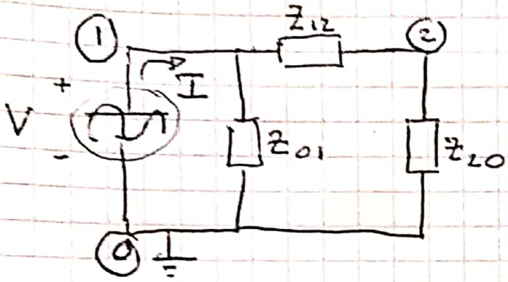


$Z_{01} = Z_1 - Z_0 = r_{01} e^{j\varphi_{01}} = X$

$Z_{12} = Z_2 - Z_1 = r_{12} e^{j\varphi_{12}} = Y$

$Z_{02} = Z_2 - Z_0 = r_{02} e^{j\varphi_{02}} = Z$

IF Z_{01}, Z_{02}, AND Z_{12} ARE IMPEDANCES AND A POTENTIAL IS APPLIED IN 1^+ AND 0^-



$$\underbrace{Z_{01}}_{X} // (\underbrace{Z_{12}}_{Y} + \underbrace{Z_{20}}_{Z}) = X // (Y+Z)$$

$$\frac{X(Y+Z)}{X+Y+Z} \qquad \boxed{\text{if } |X| = |Y| = |Z| = r}$$

$Z_0 = r_0$

$Z_1 = j\sqrt{3}\, r_0$

$Z_2 = -r_0$

$\frac{\pi}{3}$

~~$Z_{01} = (r_0 - j\sqrt{3} r_0) \quad \varphi_{01} = -\frac{\pi}{3}$~~

$Z_{01} = r_0(1 - j\sqrt{3})$

$Z_{12} = -r_0(1 - j\sqrt{3})$

$Z_{20} = r_0(-2) = -2r_0$

$$V = \frac{r^{\cancel{2}} e^{j\varphi}(e^{j\varphi_{12}} + e^{j\varphi_{02}})}{\cancel{r}(e^{j\varphi_{01}} + e^{j\varphi_{12}} + e^{j\varphi_{02}})} I$$

$$\boxed{V = r \frac{e^{j\varphi_{01}}(e^{j\varphi_{12}} + e^{j\varphi_{02}})}{e^{j\varphi_{01}} + e^{j\varphi_{12}} + e^{j\varphi_{02}}} I}$$

$$\Downarrow$$

$$\boxed{\varphi_{02} = 2\pi n - j \log\left(\frac{1 - r e^{j\varphi_{12}} + e^{j(\varphi_{12} - \varphi_{01})}}{r - e^{-j\varphi_{01}}}\right)}$$

$V =$

$$\left.\begin{aligned} Z_{01} &= r_0(1 - j\sqrt{3}) \\ Z_{12} &= -r_0(1 - j\sqrt{3}) \\ Z_{20} &= -2r_0 \end{aligned}\right] \rightarrow \frac{Z_{01}(Z_{12} + Z_{20})}{Z_{01} + Z_{12} + Z_{20}}$$

$$\frac{\Gamma_0(1-j\sqrt{3})\left[-\Gamma_0(1-j\sqrt{3})-2\Gamma_0\right]}{\Gamma_0(1-j\sqrt{3}-1+j\sqrt{3}-2)} = \cancel{\Gamma_0(1-j\sqrt{3})(\ldots)}$$

$$\frac{(1-j\sqrt{3})(-\Gamma_0+j\sqrt{3}\Gamma_0-2\Gamma_0)}{-2} = \frac{(1-j\sqrt{3})(\Gamma_0-j\sqrt{3}\Gamma_0+2\Gamma_0)}{2}$$

$$= \frac{1}{2}\left[(1-j\sqrt{3})\Gamma_0(3-j\sqrt{3})\right] = \frac{\Gamma_0}{2}(1-j\sqrt{3})(3-j\sqrt{3}) = \frac{3-j\sqrt{3}-3j\sqrt{3}-3\ldots}{2}$$

$$\frac{\Gamma_0}{2}(6-j4\sqrt{3})$$

$$\Gamma_0(3-2j\sqrt{3})$$