$u = U\sqrt{2}\sin(\omega t + \alpha)$

$i = I\sqrt{2}\sin(\omega t + \beta)$

$\alpha - \beta = \varphi$

$$\underline{Z} = \frac{\underline{U}}{\underline{I}} = \frac{U \cdot e^{j\alpha}}{I\, e^{j\beta}} = \frac{U}{I} e^{j(\alpha-\beta)} = \frac{U}{I} e^{j\varphi}.$$

$$\underline{Z} = \underbrace{\frac{U}{I}\cos\varphi}_{R} + j\underbrace{\frac{U}{I}\sin\varphi}_{X}$$

$$\underline{Z} = R + jX$$

$$\underline{Y} = \frac{1}{\underline{Z}} = \frac{1}{R+jX}$$ admitanta.

$$\underline{Y} = G - jB$$ (G: conductanță; B: susceptanță)

$$\hookrightarrow Y = \frac{R - jX}{R^2 + X^2} \begin{cases} G = \dfrac{R}{R^2+X^2} \\ B = \dfrac{X}{R^2+X^2} \end{cases}$$

pt EXAMEN

Relații între parametrii unui dipol

$$\underline{Z} = \frac{1}{\underline{Y}} = \frac{G+jB}{G-jB} = \frac{G+jB}{G^2+B^2} \begin{cases} R = \dfrac{G}{G^2+B^2} \\ X = \dfrac{B}{G^2+B^2} \end{cases}$$

$\underline{Z}\underline{Y} = 1$

$(R+jX)(G-jB) = 1$

$RG + BX = 1$

$XG - RB = 0 \Rightarrow \dfrac{X}{R} = \dfrac{B}{G}$

$\dfrac{R}{X} = \dfrac{G}{B}$