ELEC-E8422 An Introduction to Electric Energy

Exercises - Lecture 2 3-phases system

EX 1 wye and delta connections

The phase voltage of a wye connected 3-phases source is $\overline{V}_{an} = 230\angle -40°$. The source is feeding a delta connected 3-phases load, the impedance of which is $\overline{Z} = 10\angle -30°$.

a. Draw the circuit sketch of this situation
b. calculate the line-to-line voltages of the source ($\overline{V}_{ab}, \overline{V}_{bc}, \overline{V}_{ca}$)and the phase currents of the load ($\overline{I}_{ab}, \overline{I}_{bc}, \overline{I}_{ca}$)

EX 2 impedances

The phase voltage of a wye connected 3-phases source is $\overline{V}_{an} = 230\angle 0°$. The source is feeding a delta connected 3-phases load, the impedance of which is unknown. The measurement of the c-phase current gives $\overline{I}_{c} = 10\angle 75°$. Calculate the load impedance, i.e., the impedance of one branch of the delta connected load.