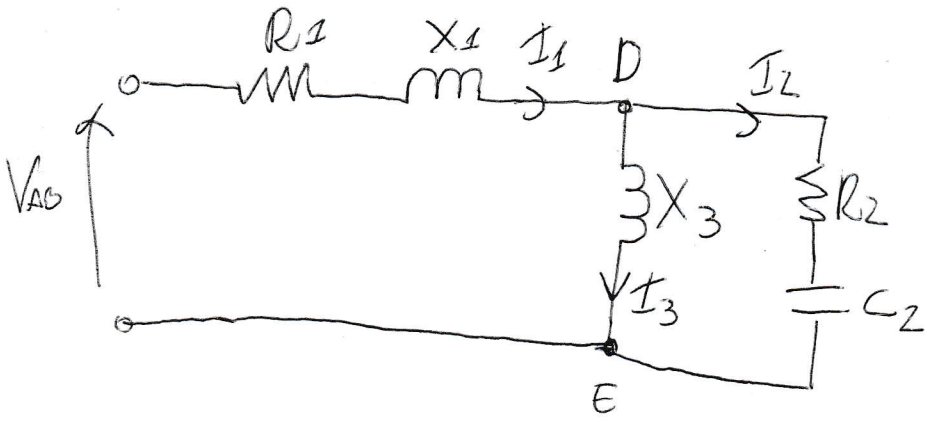
DETERMINARE LE CORRENTI I_1, I_2 E LA TENSIONE SUL CONDENSATORE



DATI

$R_1 = 20\,\Omega$

$R_2 = 10\,\Omega$

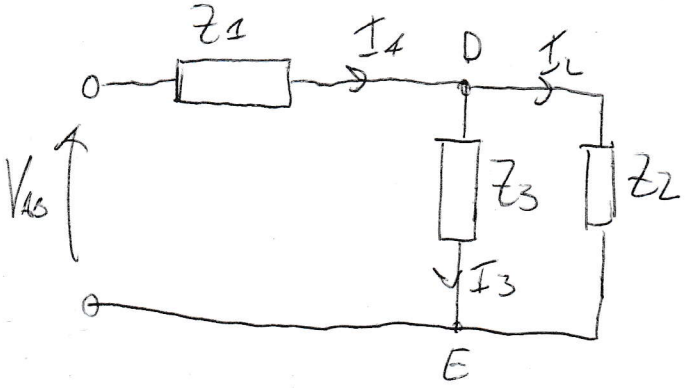
$X_1 = 10\,\Omega$

$X_2 = 20\,\Omega$

$X_3 = 40\,\Omega$

$I_3 = 0,5\,A$

TROVO LE IMPEDENZE DEL CIRCUITO:



$Z_1 = R_1 + jX_1 = 20 + j10\,\Omega$

$Z_2 = R_2 - jX_2 = 10 - j20\,\Omega$

$Z_3 = jX_3 = j40\,\Omega$

$$V_{DE} = I_3 \cdot Z_3 = 0,5 \cdot j40 = j20\,V$$

$$I_2 = \frac{V_{DE}}{Z_2} = \frac{j20}{10 - j20}\,\frac{(10 + j20)}{(10 + j20)} = \frac{j200 - 400}{10^2 + 20^2} = j0,4 - 0,8\,A$$

NODO D) $I_1 = I_2 + I_3$ $\quad I_1 = -0,8 + j0,4 + 0,5 = -0,3 + j0,4\,A$

$$V_{C2} = Z_{C2} \cdot I_2 = -j20 \cdot (j0,4 - 0,8) = 8 + j16\,V$$