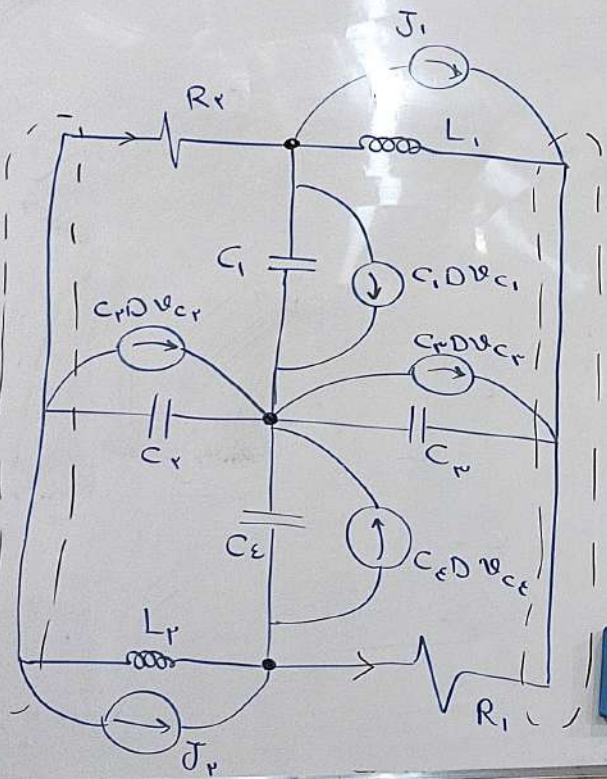
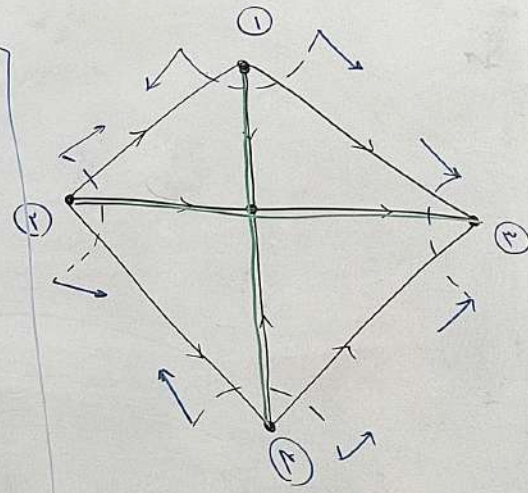




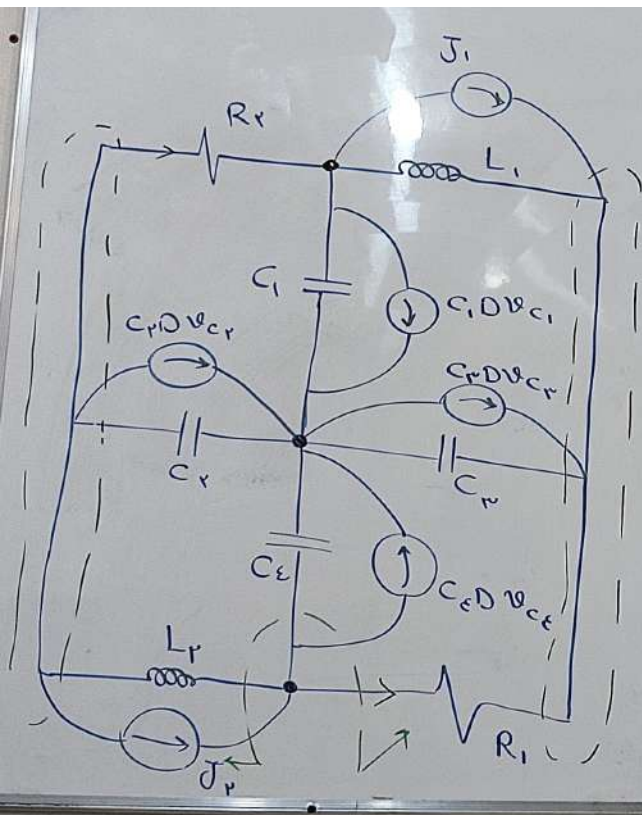
RENTA

$$y_q \cdot e = I_s$$

y_{q11} $\frac{1}{R_r} + \frac{1}{L_i D} + C_i D$	y_{q1r} $-\frac{1}{R_r}$	y_{q1e} $\frac{1}{L_i D}$	y_{q1s} 0
y_{qr1} $-\frac{1}{R_r}$	y_{qrr} $\frac{1}{R_r} + \frac{1}{L_r D} + C_r D$	y_{qre} 0	y_{qrs} $-\frac{1}{L_r D}$
y_{qe1} $\frac{1}{L_i D}$	y_{qer} 0	y_{qee} $\frac{1}{L_i D} + C_r D + \frac{1}{R_i}$	y_{qes} $\frac{1}{R_i}$
y_{qs1} 0	y_{qsr} $-\frac{1}{L_r D}$	y_{qse} $\frac{1}{R_i}$	y_{qss} $\frac{1}{R_i} + C_r D + \frac{1}{L_r D}$



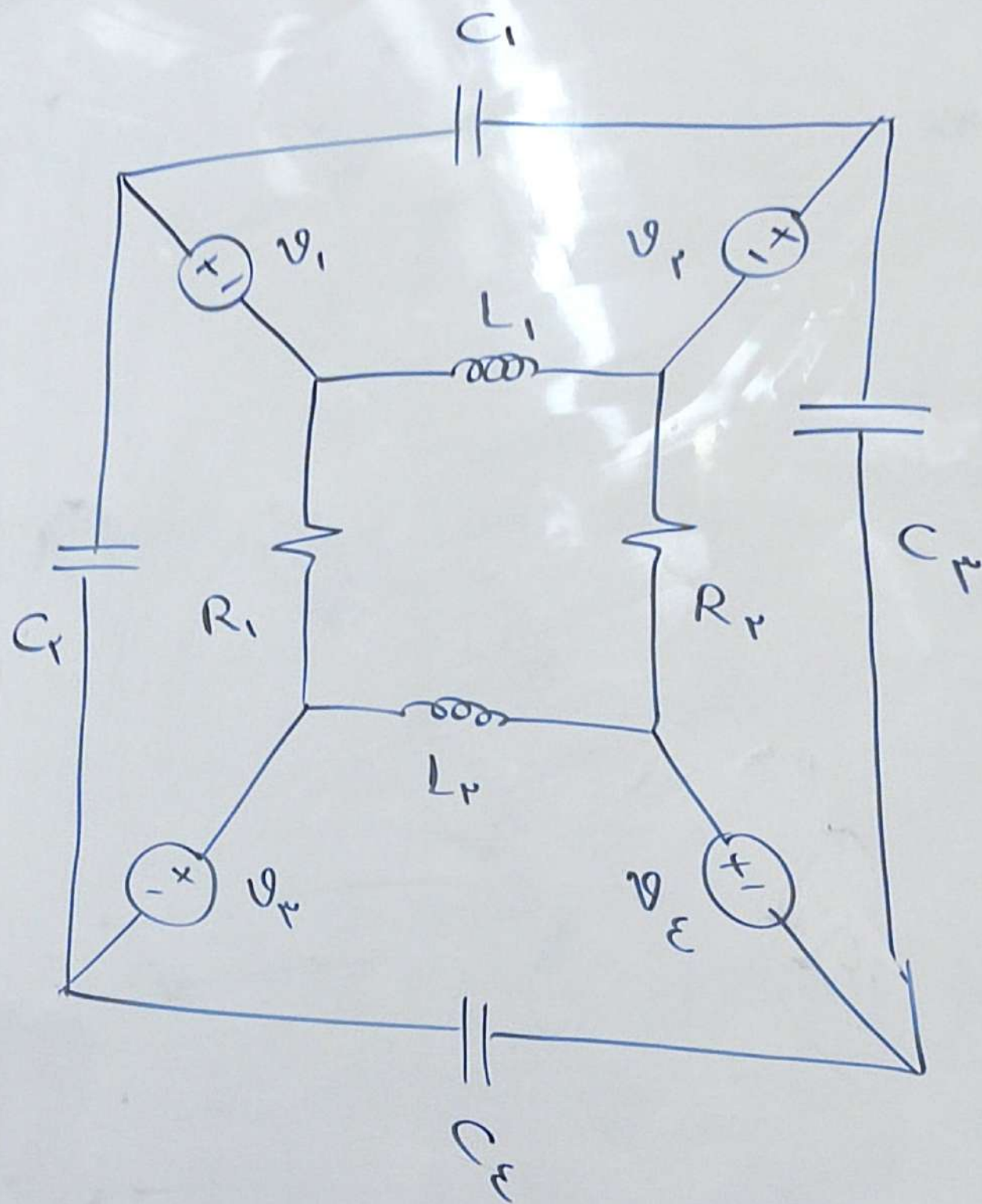
to the

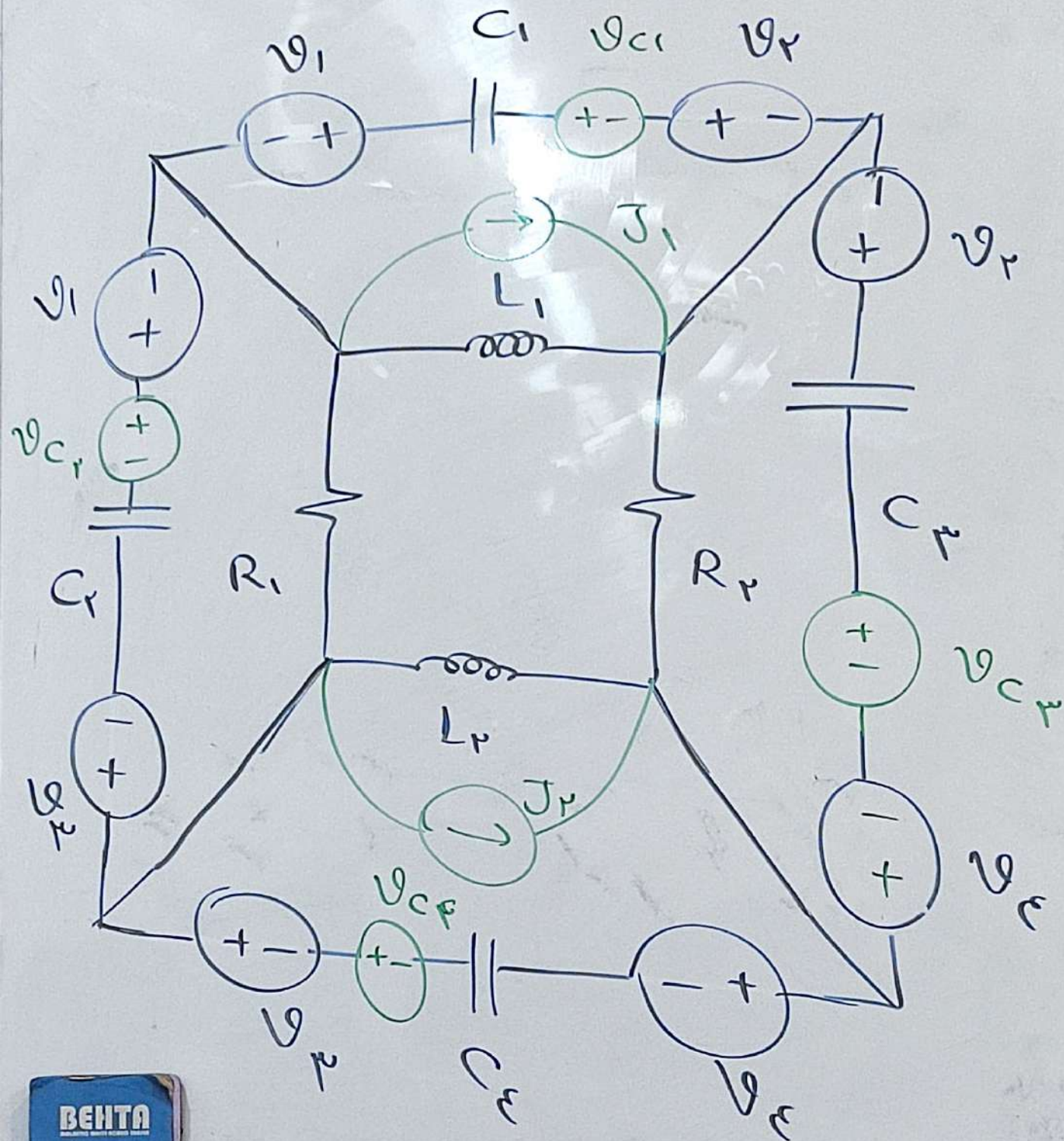


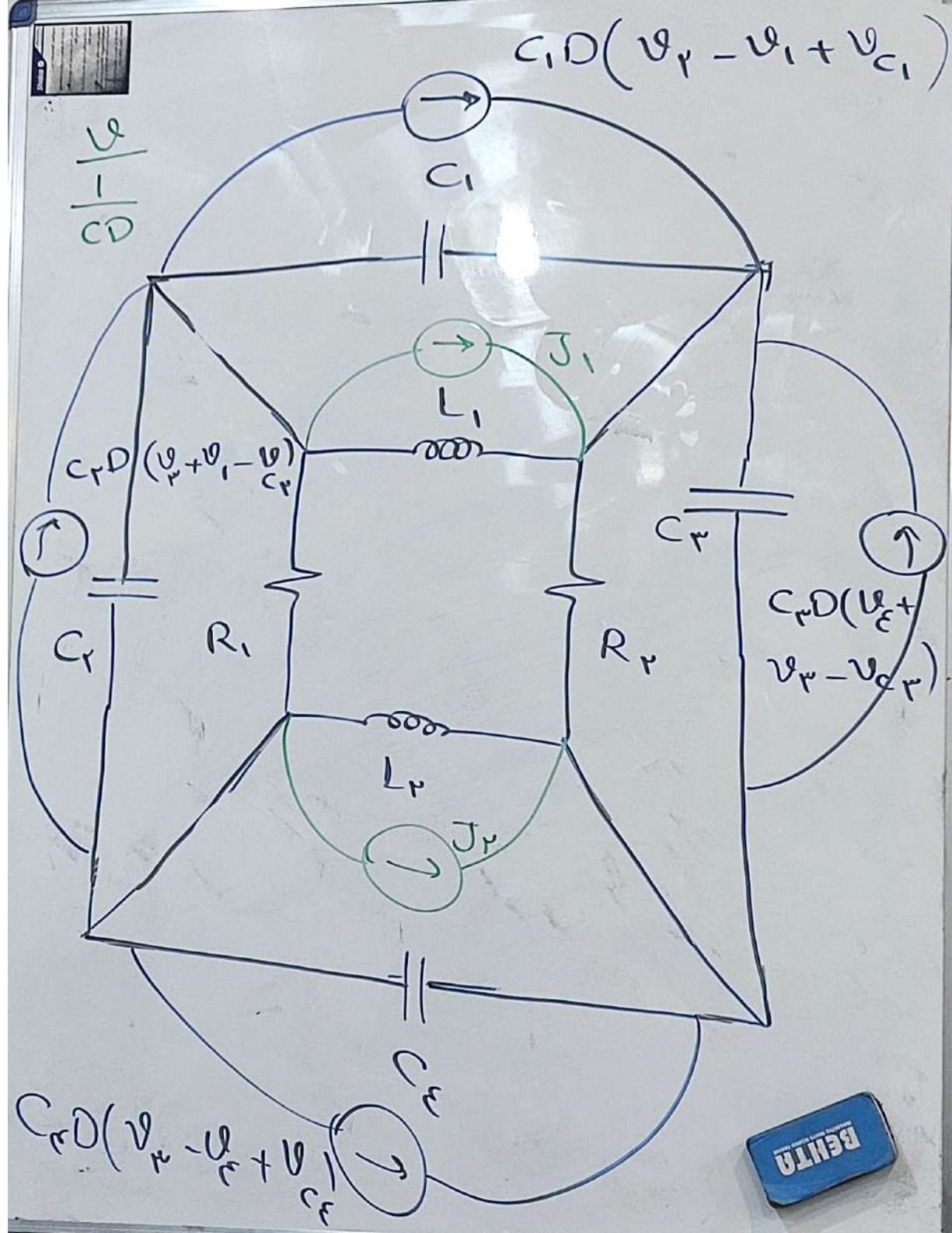
$$y_q \cdot e = I_s$$

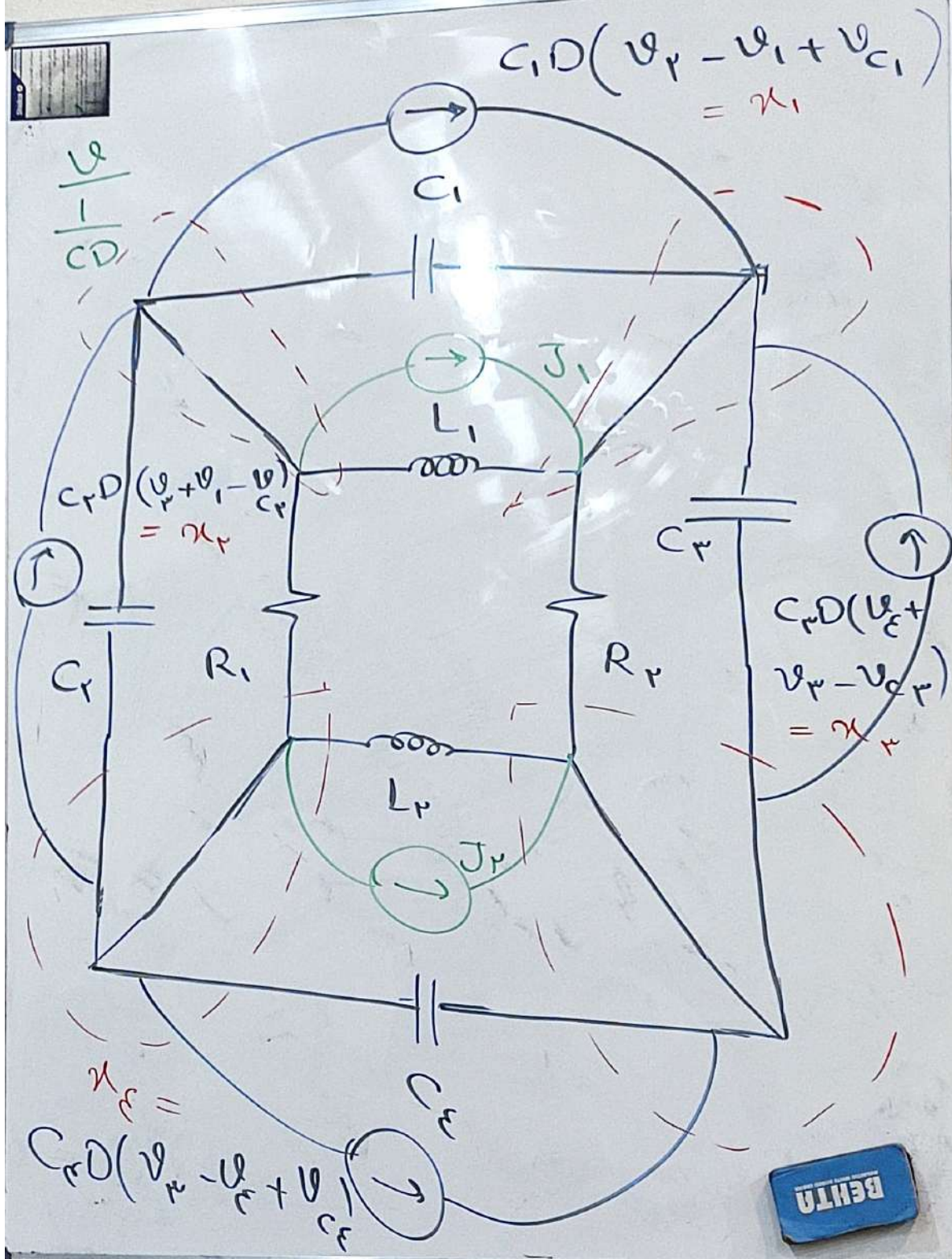
$$\begin{bmatrix}
 y_{q11} & y_{q1r} & y_{q1e} & y_{q1f} \\
 y_{qr1} & y_{qrr} & y_{qre} & y_{qrf} \\
 y_{qe1} & y_{qer} & y_{qee} & y_{qef} \\
 y_{qf1} & y_{qfr} & y_{qfe} & y_{ffe}
 \end{bmatrix}
 \begin{bmatrix}
 e_1 \\
 e_r \\
 e_e \\
 e_f
 \end{bmatrix}
 =
 \begin{bmatrix}
 -J_1 - C_1 D v_{C1} \\
 -J_r - C_r D v_{Cr} \\
 -J_e - C_e D v_{Ce} \\
 J_r - C_r D v_{Cr}
 \end{bmatrix}$$

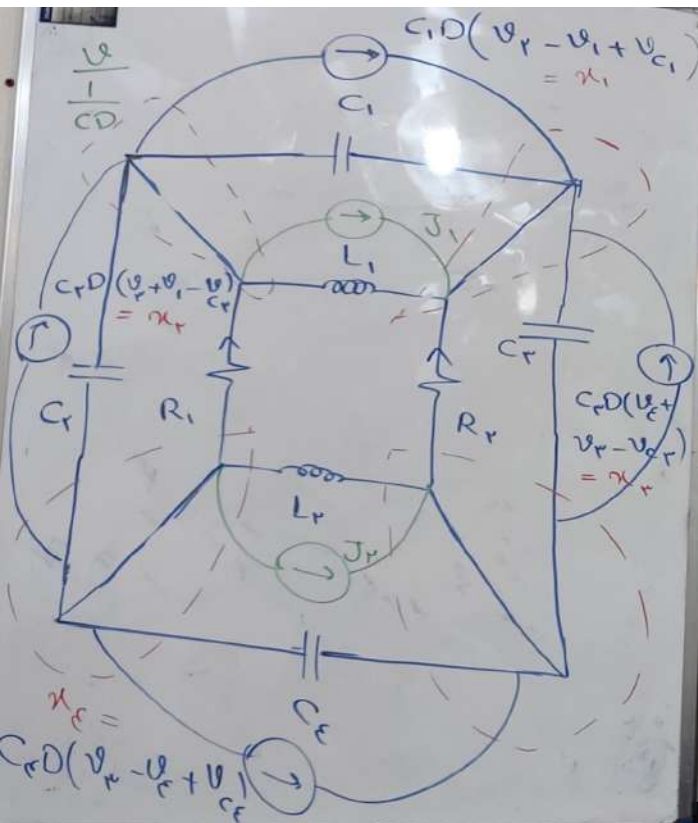
$y_{q11} = \frac{1}{R_1} + \frac{1}{L_1 D} + C_1 D$
 $y_{q1r} = -\frac{1}{R_1}$
 $y_{q1e} = \frac{1}{L_1 D}$
 $y_{q1f} = 0$
 $y_{qr1} = -\frac{1}{R_1}$
 $y_{qrr} = \frac{1}{R_1} + \frac{1}{L_r D} + C_r D$
 $y_{qre} = 0$
 $y_{qrf} = 0$
 $y_{qe1} = \frac{1}{L_1 D}$
 $y_{qer} = 0$
 $y_{qee} = \frac{1}{L_1 D} + C_r D + \frac{1}{R_1}$
 $y_{qef} = \frac{1}{R_1}$
 $y_{qf1} = 0$
 $y_{qfr} = -\frac{1}{L_r D}$
 $y_{qfe} = \frac{1}{R_1}$
 $y_{ffe} = \frac{1}{R_1} + C_e D + \frac{1}{L_r D}$









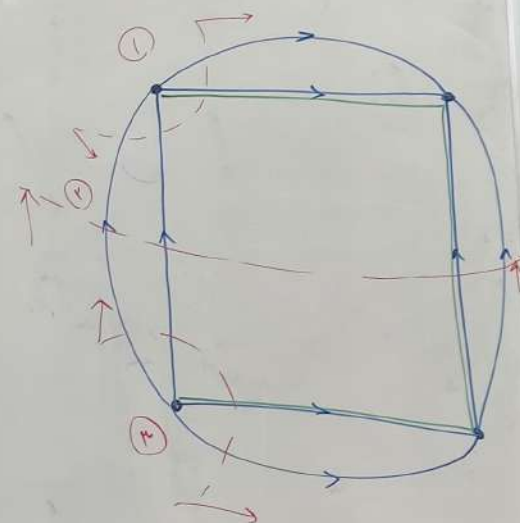


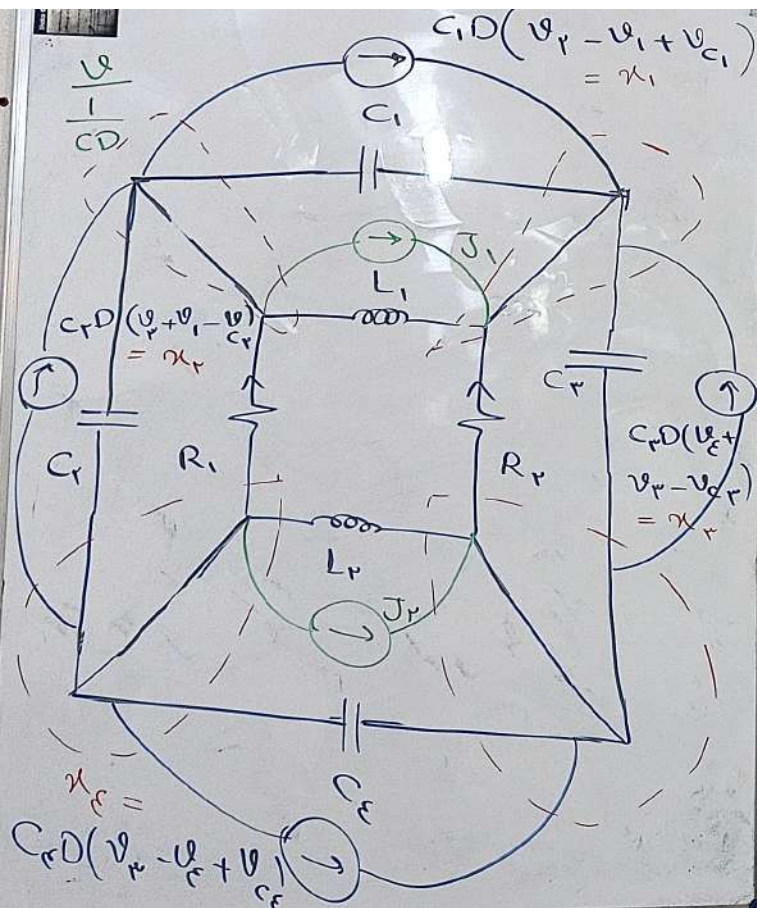
$$Y_q \cdot e = I_s$$

$$\begin{bmatrix} Y_{q_{11}} & Y_{q_{1r}} & Y_{q_{1e}} \\ Y_{q_{r1}} & Y_{q_{rr}} & Y_{q_{re}} \\ Y_{q_{e1}} & Y_{q_{er}} & Y_{q_{ee}} \end{bmatrix} \begin{bmatrix} e_1 \\ e_r \\ e_e \end{bmatrix} = \begin{bmatrix} I_{s1} \\ I_{sr} \\ I_{se} \end{bmatrix}$$

where the admittance parameters are:

- $Y_{q_{11}} = C_i D + \frac{1}{L_i D} + \frac{1}{R_i} + C_r D$
- $Y_{q_{1r}} = -\frac{1}{R_i} - C_r D$
- $Y_{q_{1e}} = -\frac{1}{R_i} - C_r D$
- $Y_{q_{r1}} = -\frac{1}{R_i} - C_r D$
- $Y_{q_{rr}} = \frac{1}{R_i} + \frac{1}{R_i} + C_r D + C_r D$
- $Y_{q_{re}} = \frac{1}{R_i} + C_r D$
- $Y_{q_{e1}} = -\frac{1}{R_i} - C_r D$
- $Y_{q_{er}} = \frac{1}{R_i} + C_r D$
- $Y_{q_{ee}} = C_r D + C_e D + \frac{1}{R_i} + \frac{1}{L_r D}$





$$Y_q \cdot e = I_s$$

$$\begin{bmatrix}
 Y_{q11} & Y_{q12} & Y_{q13} \\
 Y_{q21} & Y_{q22} & Y_{q23} \\
 Y_{q31} & Y_{q32} & Y_{q33}
 \end{bmatrix}
 \begin{bmatrix}
 e_1 \\
 e_2 \\
 e_3
 \end{bmatrix}
 =
 \begin{bmatrix}
 x_1 - x_2 - J_1 \\
 -x_2 - x_3 \\
 -x_2 - x_3 - J_2
 \end{bmatrix}$$

