

$$0 = \frac{U_1 - U_2}{R_7} + \frac{U_1}{R_{10}}$$

$$0 = \frac{U_2 - U_1}{R_7} + I_{q2} + \frac{U_2 - U_5}{R_6} + \frac{U_2 - U_3 + U_{q2}}{R_1}$$

$$0 = \frac{U_3 - U_2 - U_{q2}}{R_1} + \frac{U_3 - U_4 + U_{q1}}{R_2} - I_{q1}$$

$$0 = \frac{U_4 - U_5}{R_5} + \frac{U_4 - U_6}{R_3} + \frac{U_4 - U_3 - U_{q1}}{R_2}$$

$$0 = \frac{U_5 - U_4}{R_5} + \frac{U_5 - U_6}{R_4} + \frac{U_5 - U_2}{R_6} + \frac{U_5 - U_7}{R_8} + \frac{U_5 + U_{q3}}{R_{11}}$$

$$0 = I_{q1} + \frac{U_6 - U_4}{R_3} + \frac{U_6 - U_5}{R_4}$$

$$0 = \frac{U_7}{R_9} + \frac{U_7 - U_5}{R_8} - I_{q2}$$