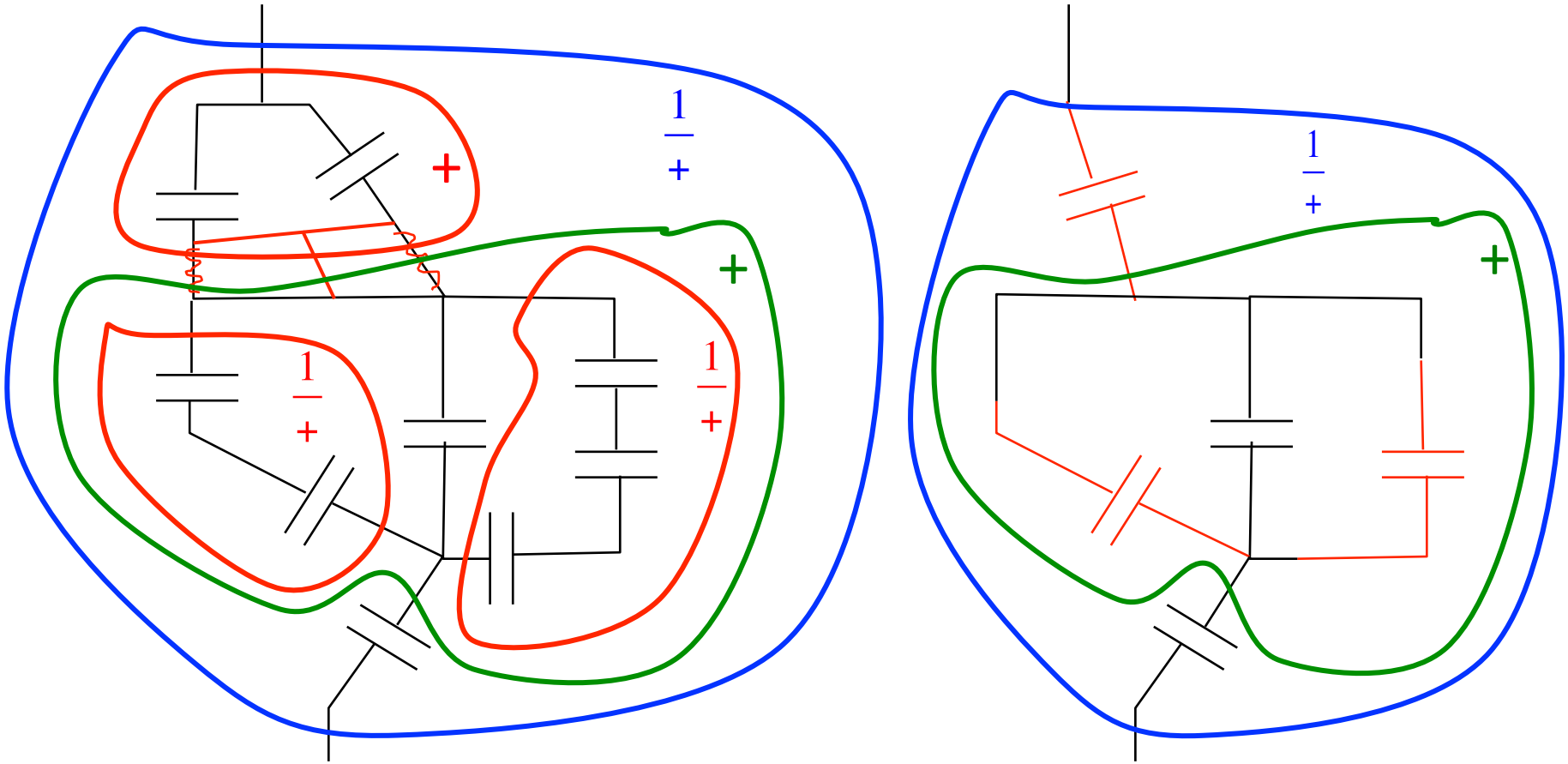
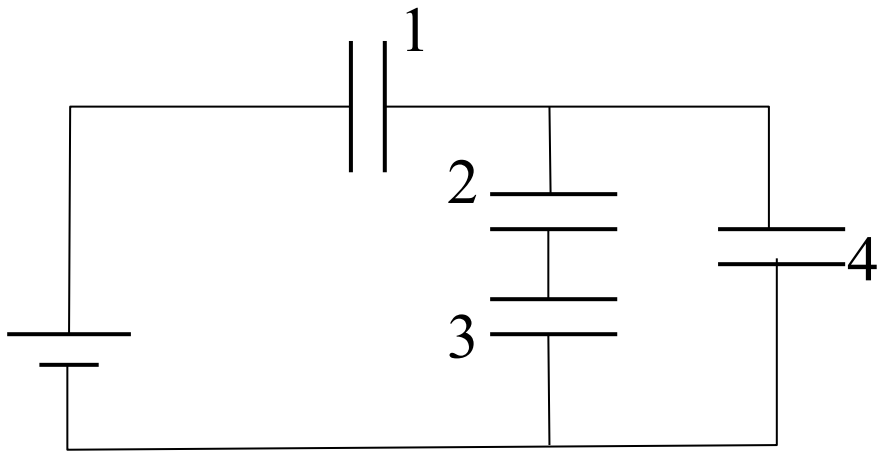
Combining Capacitors



Inside a Capacitor Network

Given V_B and all capacitances, what is the charge on C_2?



$$C_{23} = (C_2^{-1} + C_3^{-1})^{-1}$$

$$C_{234} = C_{23} + C_4$$

$$C_{1234} = (C_1^{-1} + C_{234}^{-1})^{-1}$$

$$V_B = \Delta V_{1234}$$ parallel

$$C_{1234}\Delta V_{1234} = Q_{1234} = Q_1 = Q_{234}$$ series

$$\frac{Q_{234}}{C_{234}} = \Delta V_{234} = \Delta V_4 = \Delta V_{23}$$ parallel

$$C_{23}\Delta V_{23} = Q_{23} = Q_2 = Q_3$$ series