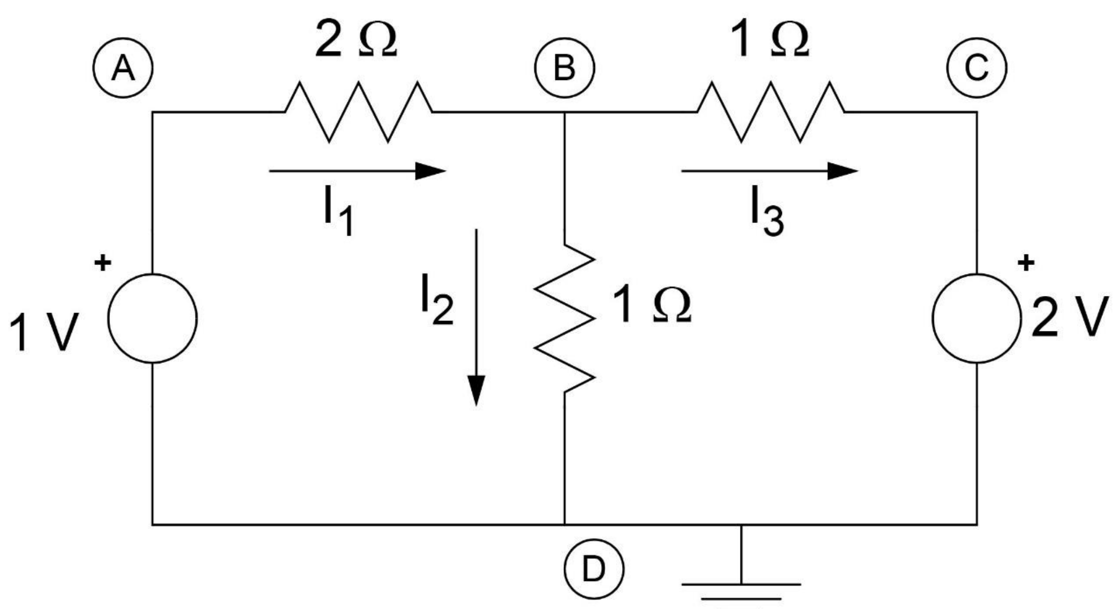
Unit 9.1.2

Q 9.1.2.1: For the circuit shown below use superposition to calculate the currents I_1, I_2 and I_3 when:

1. Only the 1 V source is turned ON and the other source is turned OFF.
2. Only the 2 V source is turned ON and the other source is turned OFF.
3. Calculate the currents when both voltage sources are turned ON.

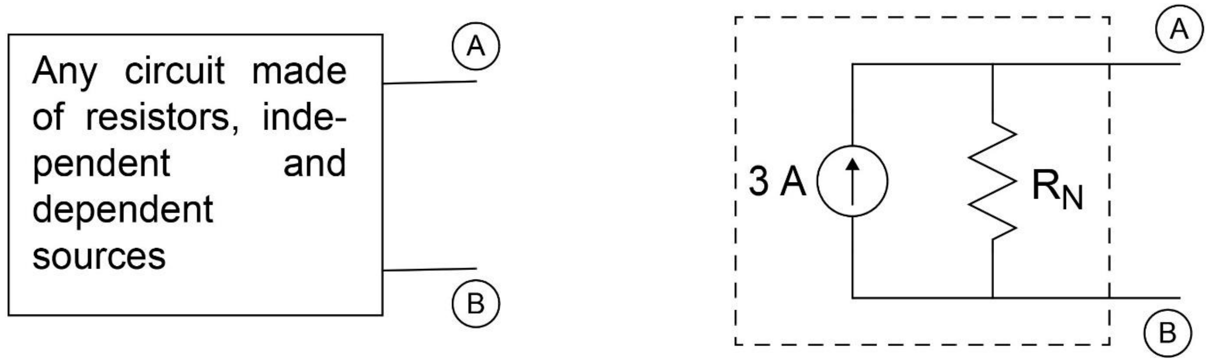


Solution: (Self Assessment)

1. When 1V source turned ON: I_1 = 0.4 A, I_2 = 0.2 A and I_3 = 0.2 A.
2. When 2V source turned ON: I_1 = - 0.4 A, I_2 = 0.8 A and I_3 = - 1.2 A.
3. When both voltage sources are turned ON: I_1 = 0 A, I_2 = 1 A and I_3 = - 1 A.

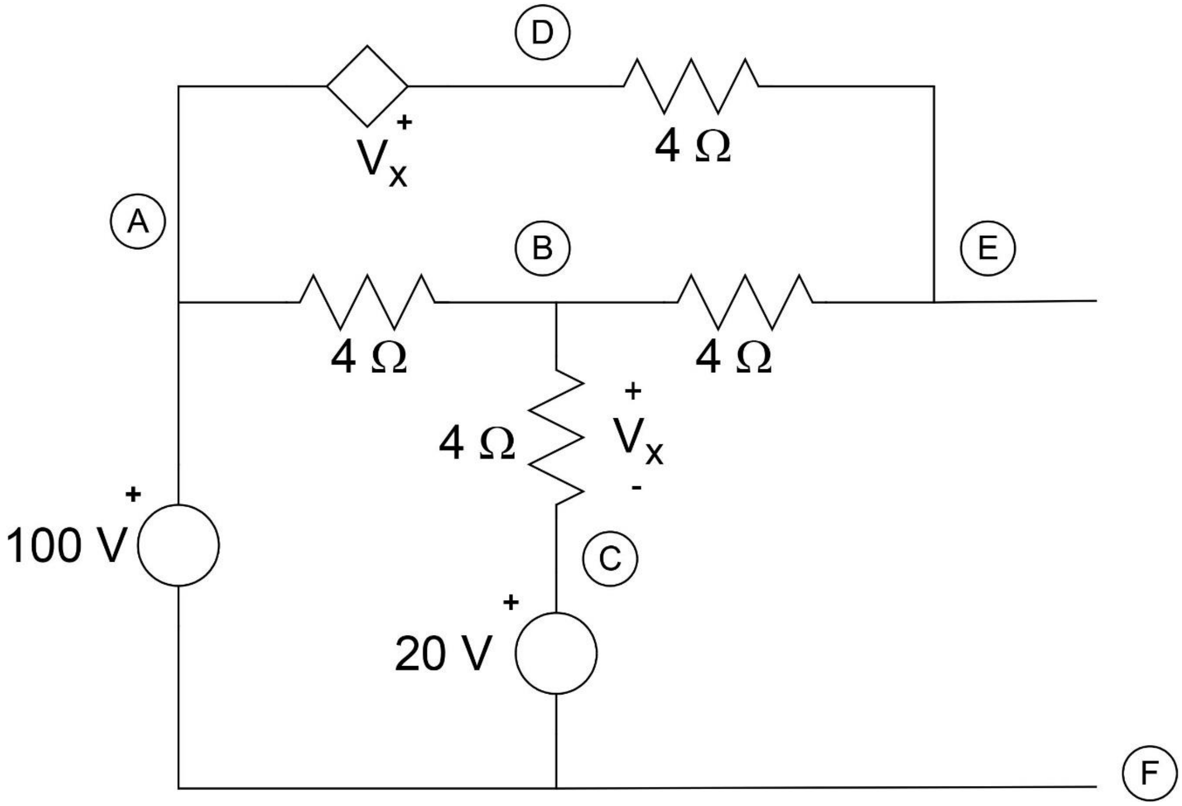
Unit 9.3.4

Q 9.3.4.1: For the circuits shown below, the right circuit is the Norton equivalent of the circuit on the left. If the open-circuit voltage V_{AB} = 10 V, then calculate the Norton resistance R_N.



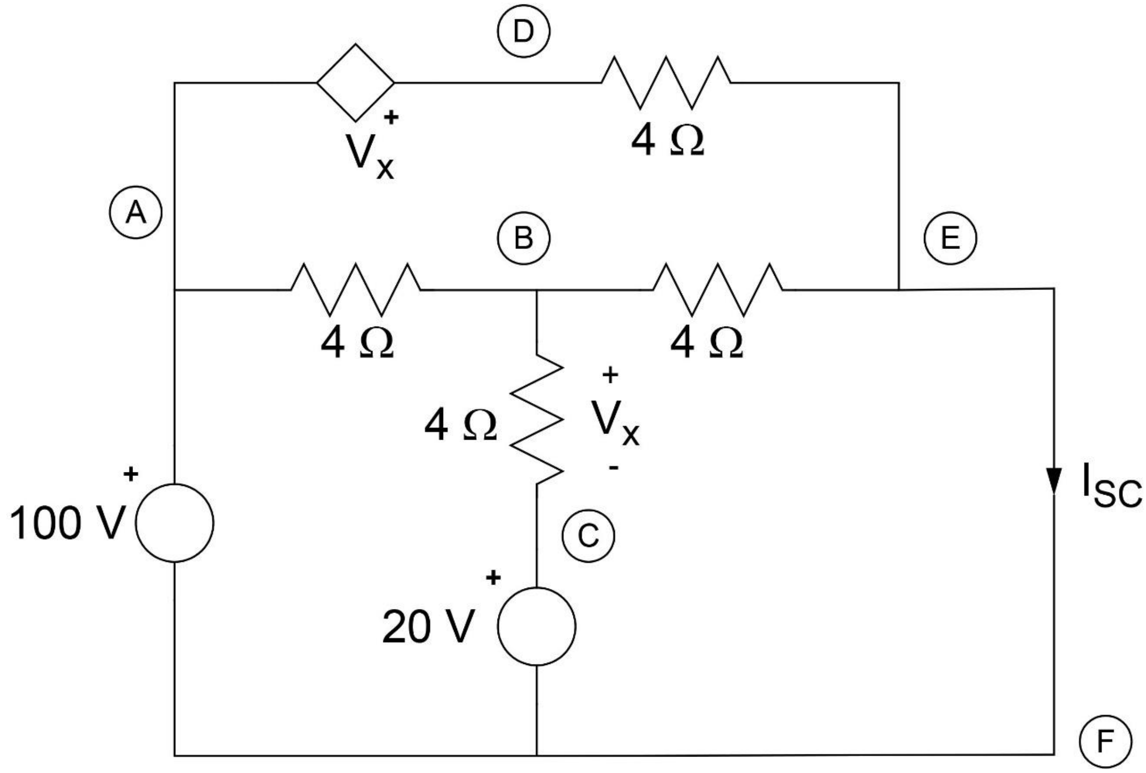
Solution: (Self Assessment) The Norton resistance R_N = 3.3333 ohms.

Q 9.3.4.2: For the circuit shown below, calculate the open-circuit Thevenin voltage V_{EF} between the terminals E and F.



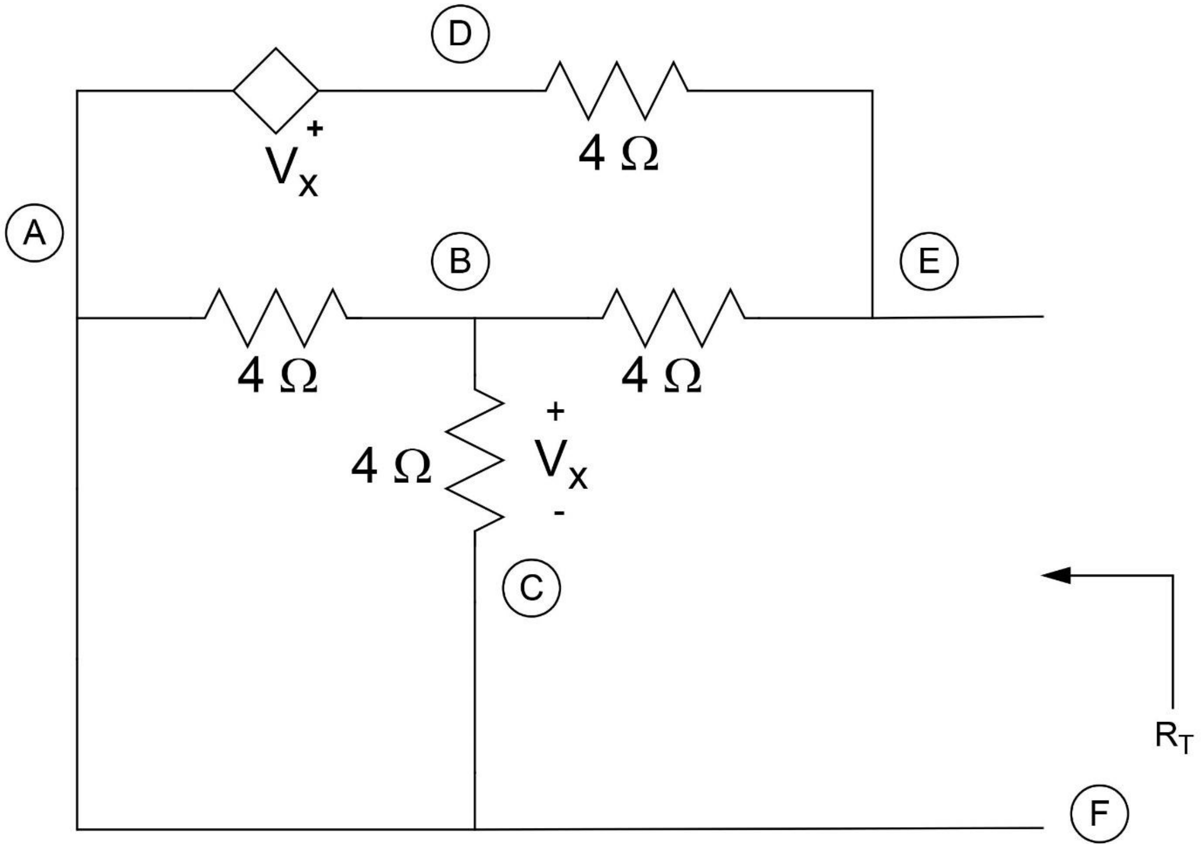
Solution: (Self Assessment) The open-circuit voltage V_{EF} = 120 V.

Q 9.3.4.3: For the circuit shown below, calculate the short circuit current I_{SC} between the terminals E and F.



Solution: (Self Assessment) The short-circuit current I_{SC} = 40 A.

Q 9.3.4.4: For the circuit shown below, calculate the input resistance R_T between the terminals E and F.



Solution: (Self Assessment) The input resistance R_T = 3 ohms.