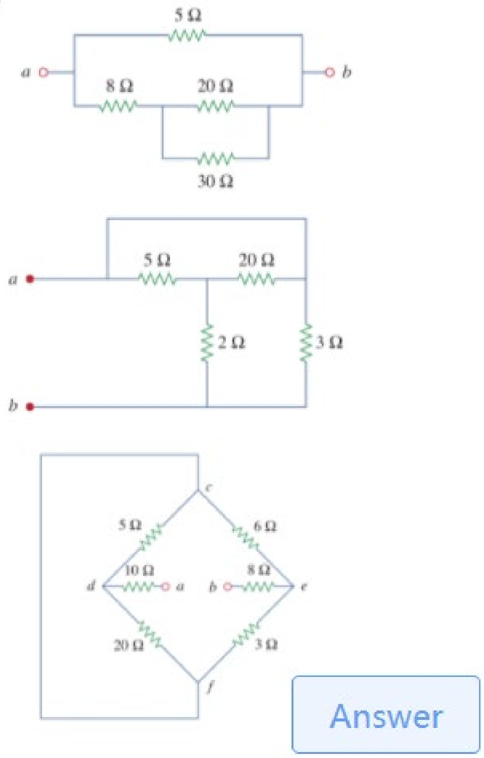
3. For the circuits , obtain the equivalent resistance at terminals a-b.



Answer No 3

1st figure answer:

(a) $R_{ab} = 5\|(8+20\|30) = 5\|(8+12) = \frac{5x20}{25} = \underline{\mathbf{4\ \Omega}}$

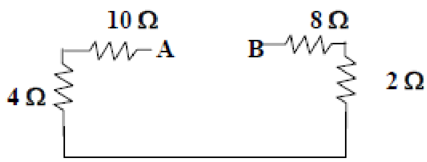
(b) $R_{ab} = 2+4\|(5+3)\|8+5\|10\|4 = 2+4\|4+5\|2.857 = 2+2+1.8181 = \underline{\mathbf{5.818\ \Omega}}$

2nd figure answer:

3rd figure answer:

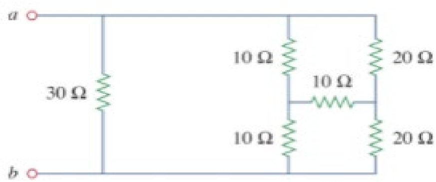
$$5 \| 20 = \frac{5x20}{25} = 4\Omega$$

$$6 \| 3 = \frac{6x3}{9} = 2\Omega$$

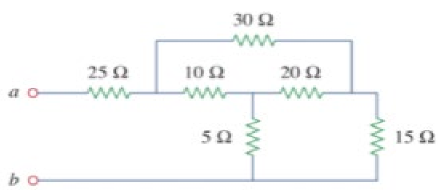


$R_{ab} = 10 + 4 + 2 + 8 = \underline{\mathbf{24\ \Omega}}$

4. Obtain the equivalent resistance at the terminals a-b for each of the circuits.



(a)

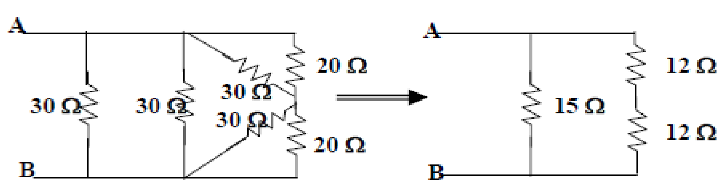


(b)

Answer No 4

(a) $30 \| 30 = 15\Omega$ and $30 \| 20 = 30\text{x}20/(50) = 12\Omega$

$R_{ab} = 15 \| (12 + 12) = 15\text{x}24/(39) = \underline{\mathbf{9.231\ \Omega}}$



(b) Converting the T-subnetwork into its equivalent Δ network gives

$R_{a'b'} = 10\text{x}20 + 20\text{x}5 + 5\text{x}10/(5) = 350/(5) = 70\ \Omega$

$R_{b'c'} = 350/(10) = 35\Omega$, $Ra'c' = 350/(20) = 17.5\ \Omega$

Also $30 \| 70 = 30\text{x}70/(100) = 21\Omega$ and $35/(15) = 35\text{x}15/(50) = 10.5$

$R_{ab} = 25 + 17.5 \| (21 + 10.5) = 25 + 17.5 \| 31.5$

$R_{ab} = \underline{\mathbf{36.25\ \Omega}}$