

# Conversiones

## Delta ( $\Delta$ ) - Estrella ( Y )

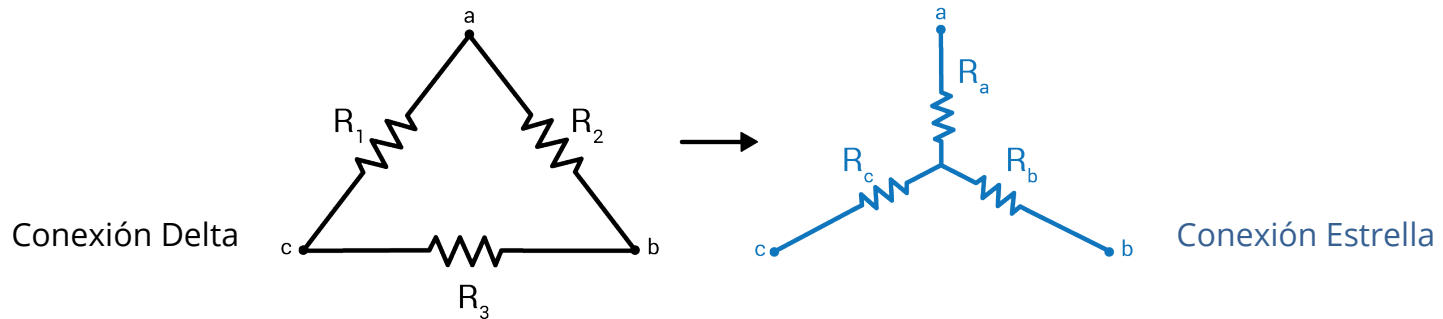
## Estrella ( Y ) - Delta ( $\Delta$ )

- *Dr. Roberto Pereira Arroyo* -

*Escuela de Ingeniería Electrónica*

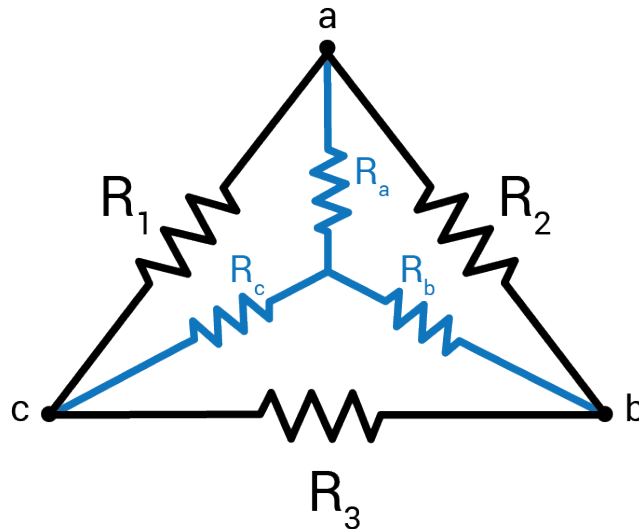
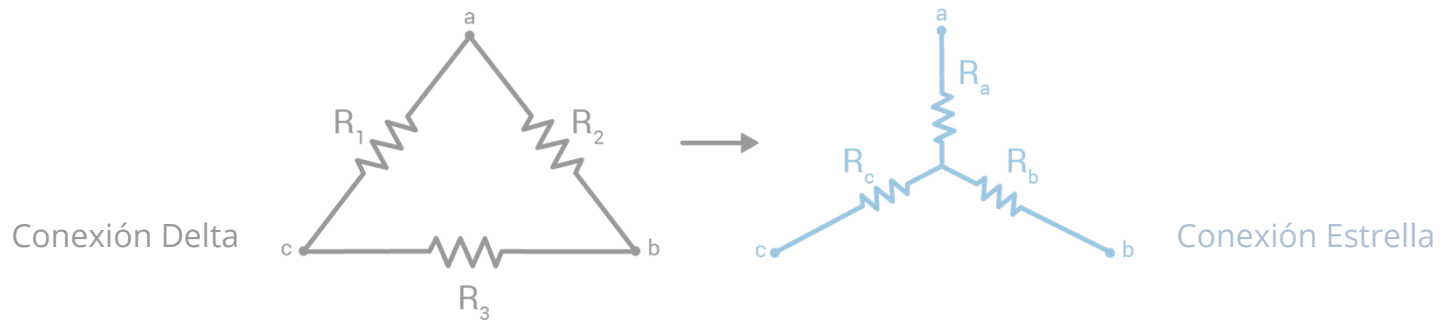
# Delta ( $\Delta$ ) - Estrella (Y)

Estas conversiones se utilizan para simplificar arreglos de resistencias que no están en serie ni en paralelo.



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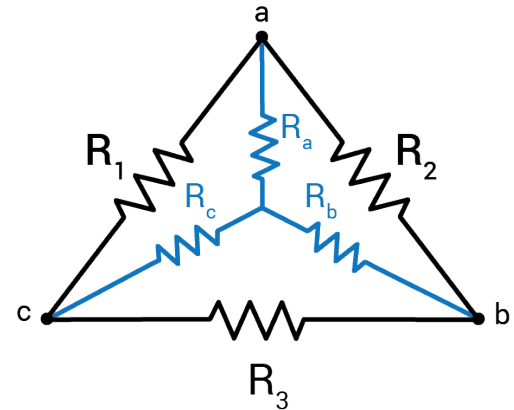


# Delta ( $\Delta$ ) - Estrella ( Y )

Para calcular  $R_a$  se divide entre la suma de las tres resistencias que están conectadas en Delta y se multiplica por las dos resistencias adyacentes a ella.

$R_a$

$$R_a = \frac{R_1 \cdot R_2}{R_1 + R_2 + R_3}$$

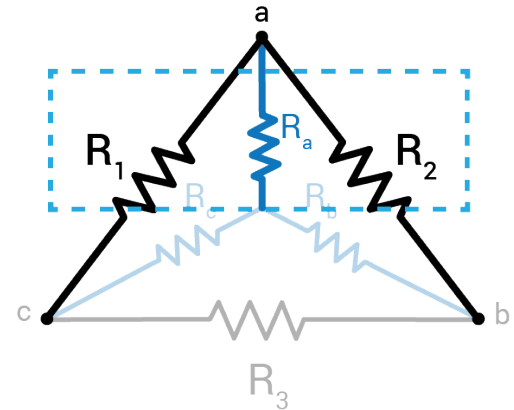


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$R_a$

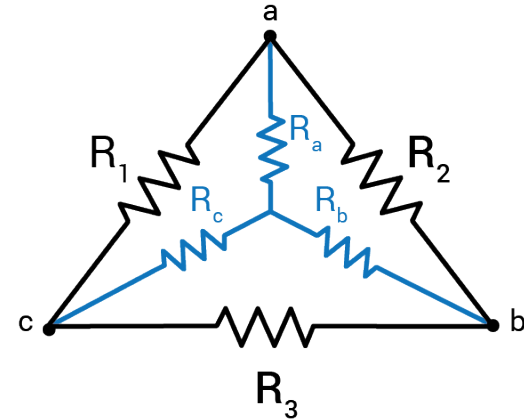
$$R_a = \frac{R_1 \cdot R_2}{R_1 + R_2 + R_3}$$



# Delta ( $\Delta$ ) - Estrella (Y)

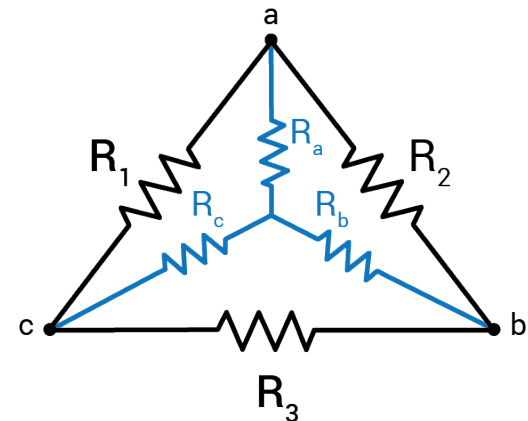
$R_b$

$$R_b = \frac{R_2 \cdot R_3}{R_1 + R_2 + R_3}$$



$R_c$

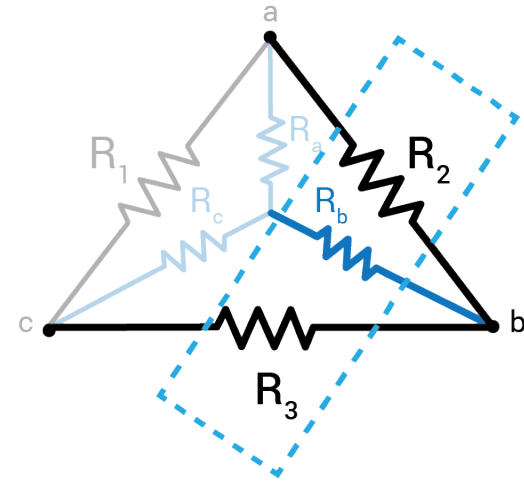
$$R_c = \frac{R_1 \cdot R_3}{R_1 + R_2 + R_3}$$



# Delta ( $\Delta$ ) - Estrella ( Y )

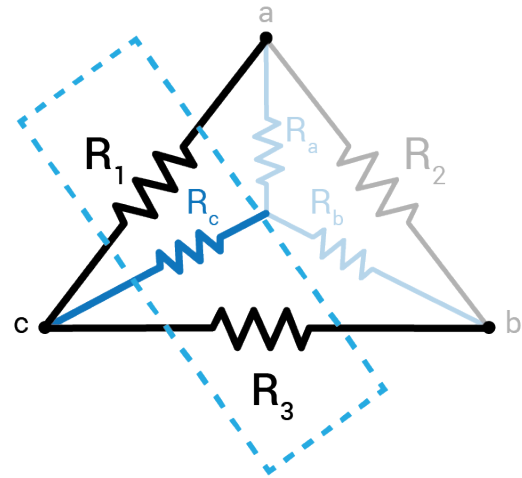
$R_b$

$$R_b = \frac{R_2 \cdot R_3}{R_1 + R_2 + R_3}$$

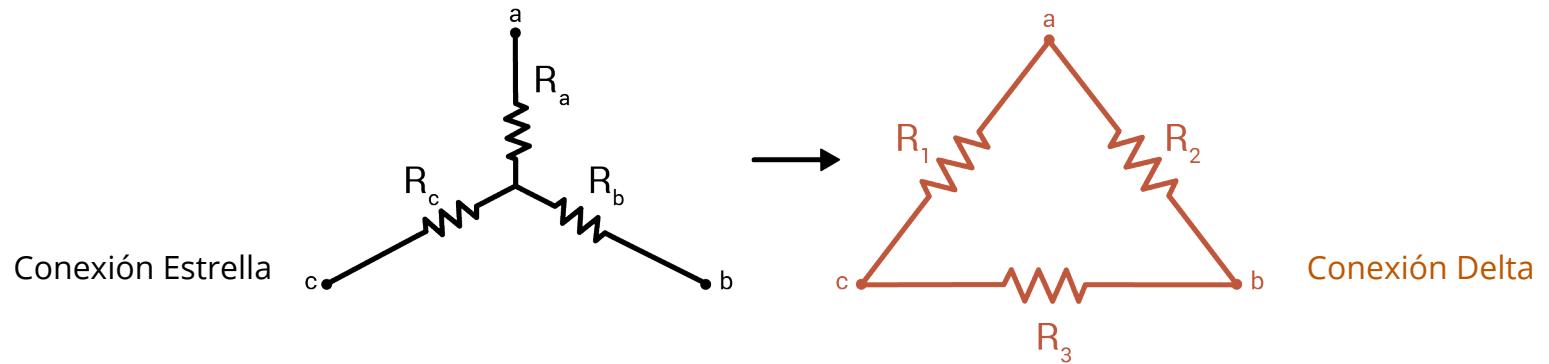


$R_c$

$$R_c = \frac{R_1 \cdot R_3}{R_1 + R_2 + R_3}$$

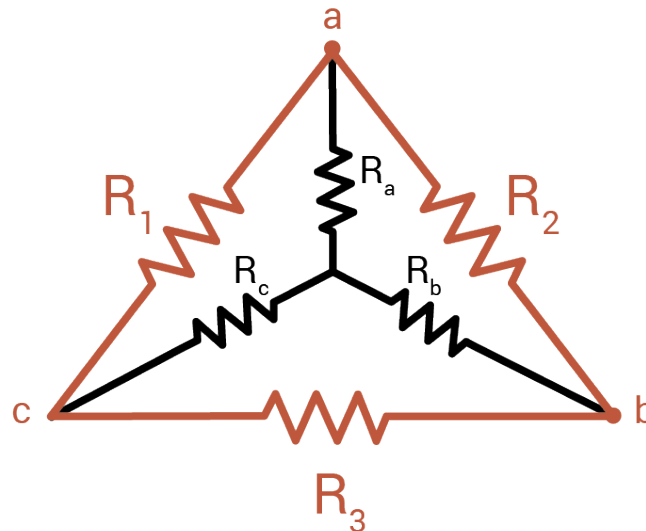
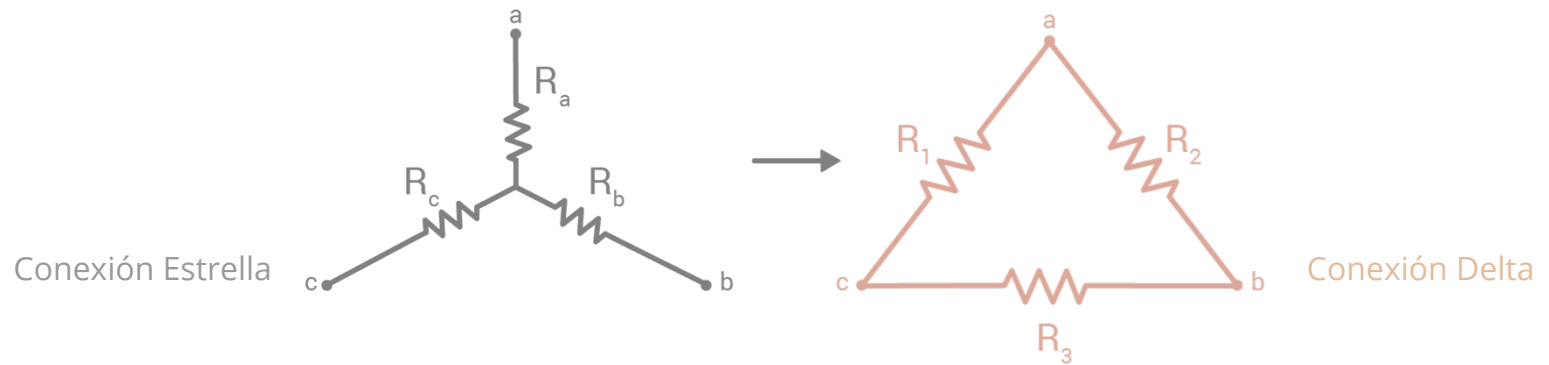


# Estrella ( Y ) - Delta ( $\Delta$ )





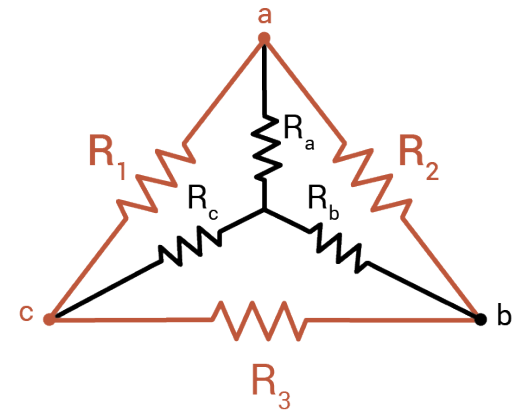
# Estrella ( Y ) - Delta ( $\Delta$ )



# Estrella ( Y ) - Delta ( Δ )

$R_1$

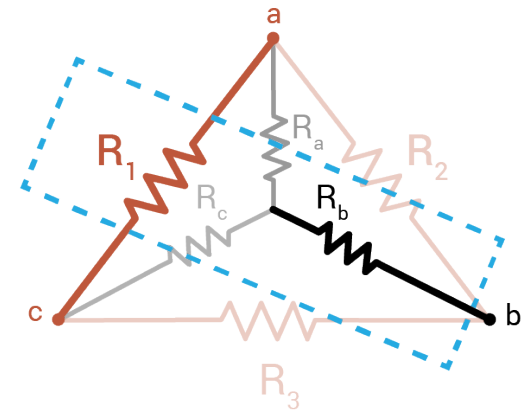
$$R_1 = \frac{R_a R_b + R_b R_c + R_a R_c}{R_b}$$



# Estrella ( Y ) - Delta ( Δ )

$R_1$

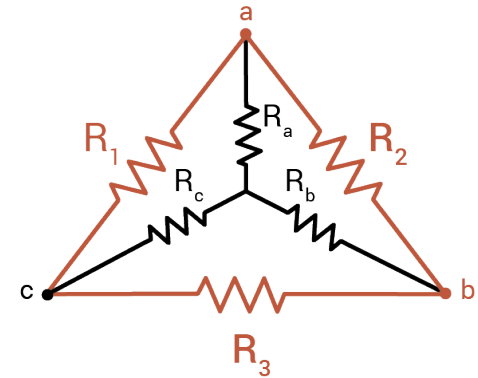
$$R_1 = \frac{R_a R_b + R_b R_c + R_a R_c}{R_b}$$



# Estrella ( Y ) - Delta ( Δ )

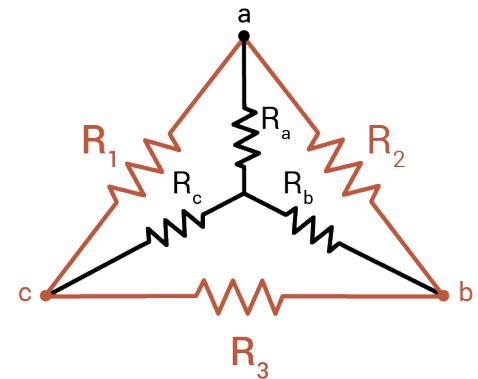
$R_2$

$$R_2 = \frac{R_a R_b + R_b R_c + R_a R_c}{R_c}$$



$R_3$

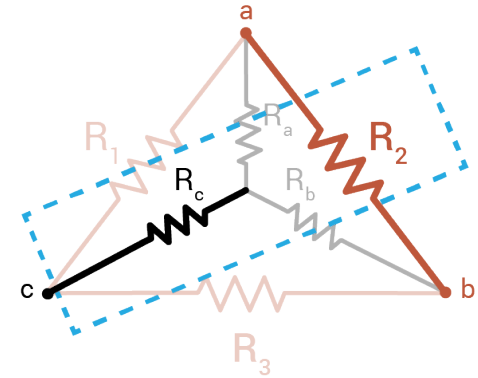
$$R_3 = \frac{R_a R_b + R_b R_c + R_a R_c}{R_a}$$



# Estrella ( Y ) - Delta ( Δ )

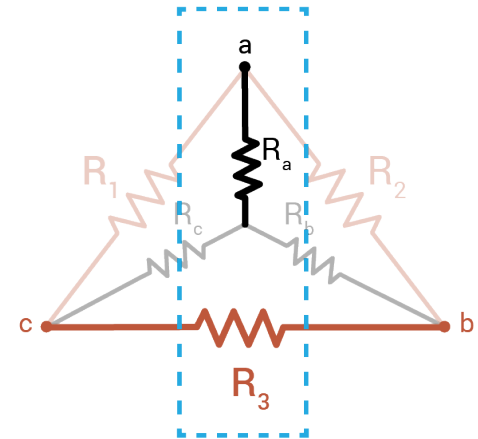
$R_2$

$$R_2 = \frac{R_a R_b + R_b R_c + R_a R_c}{R_c}$$

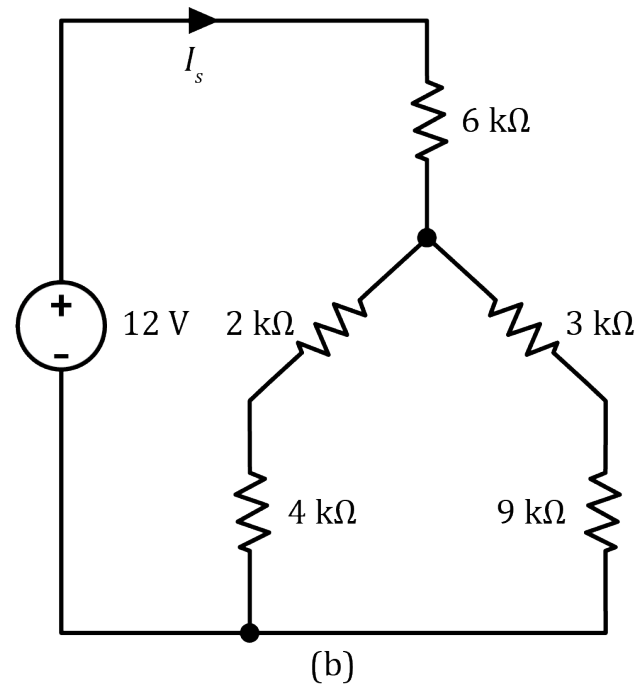
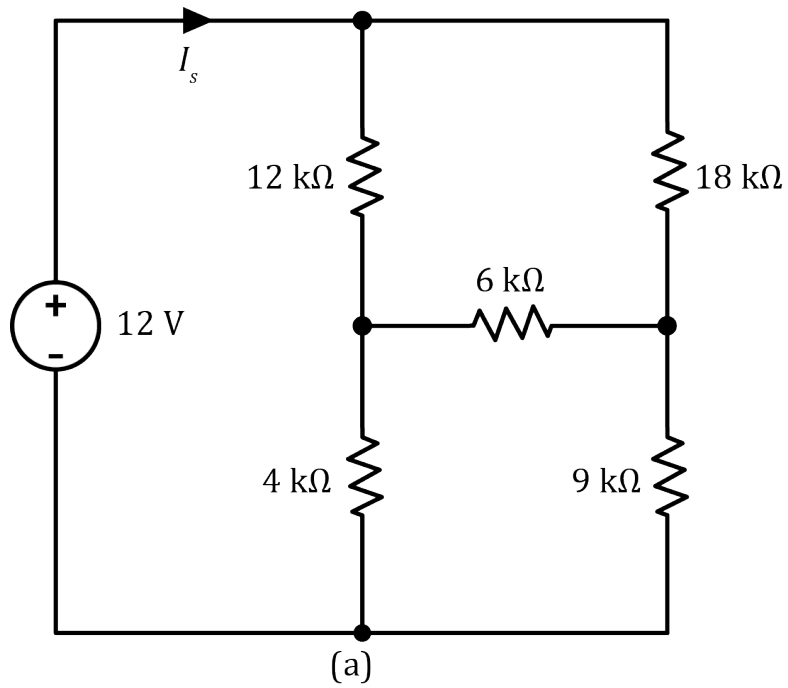


$R_3$

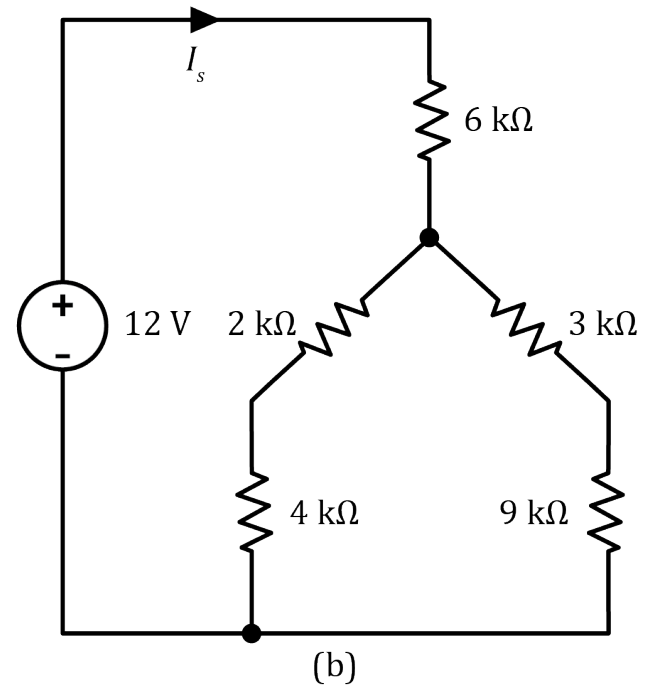
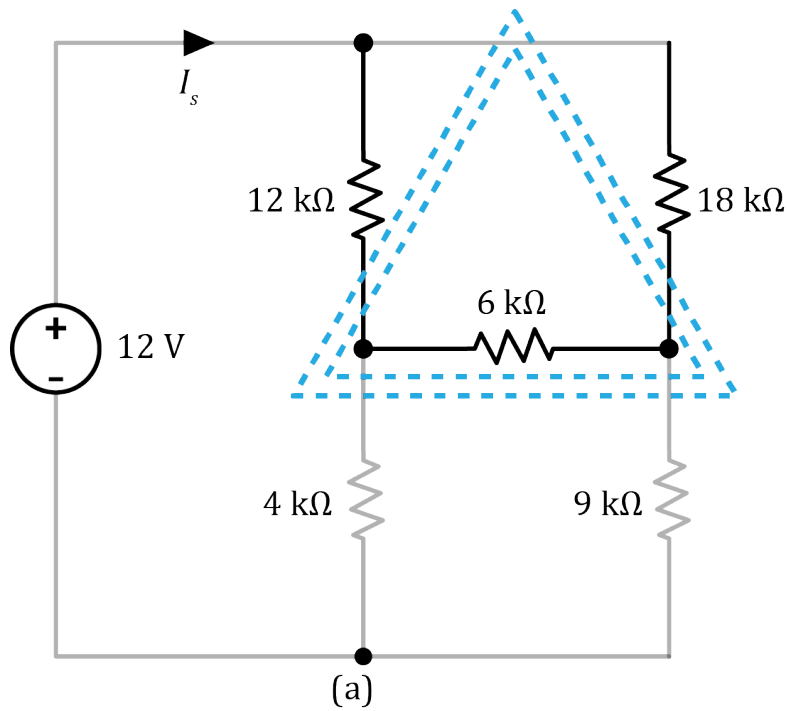
$$R_3 = \frac{R_a R_b + R_b R_c + R_a R_c}{R_a}$$



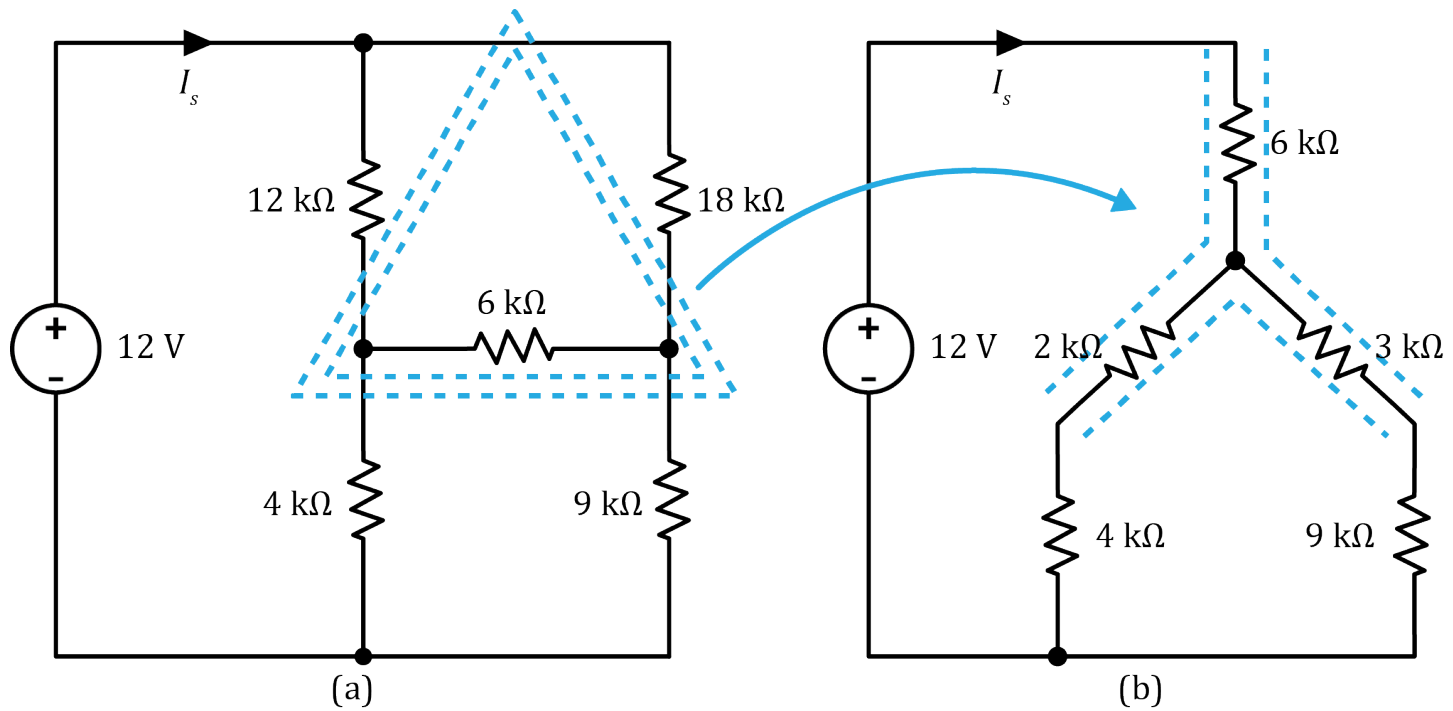
# Ejemplo



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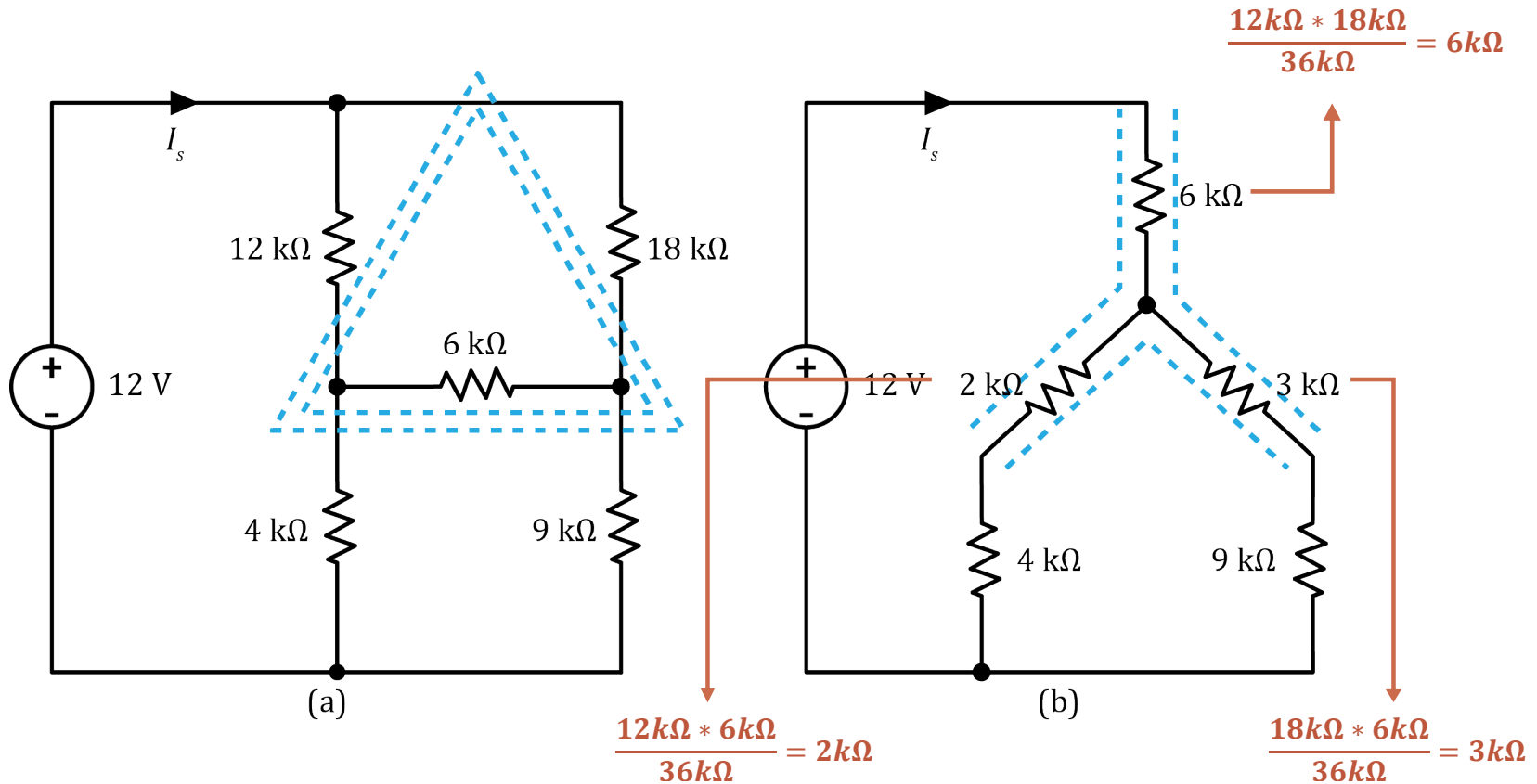


# Ejemplo

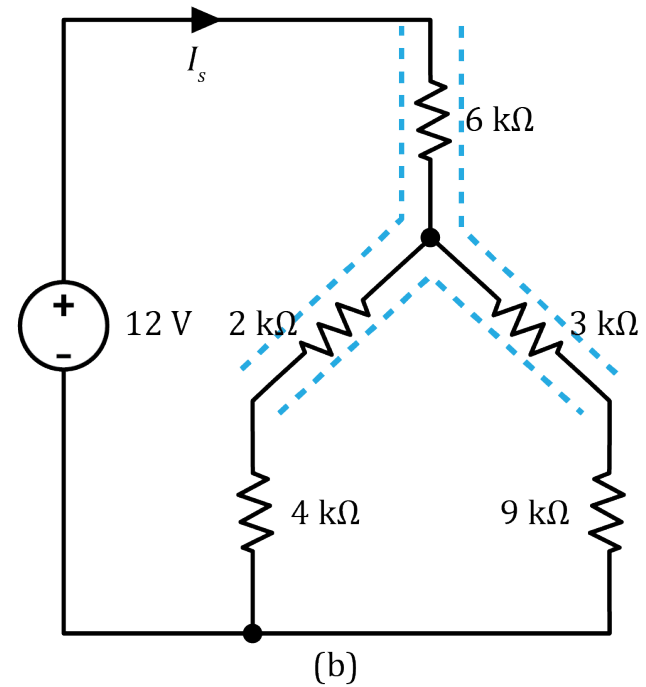
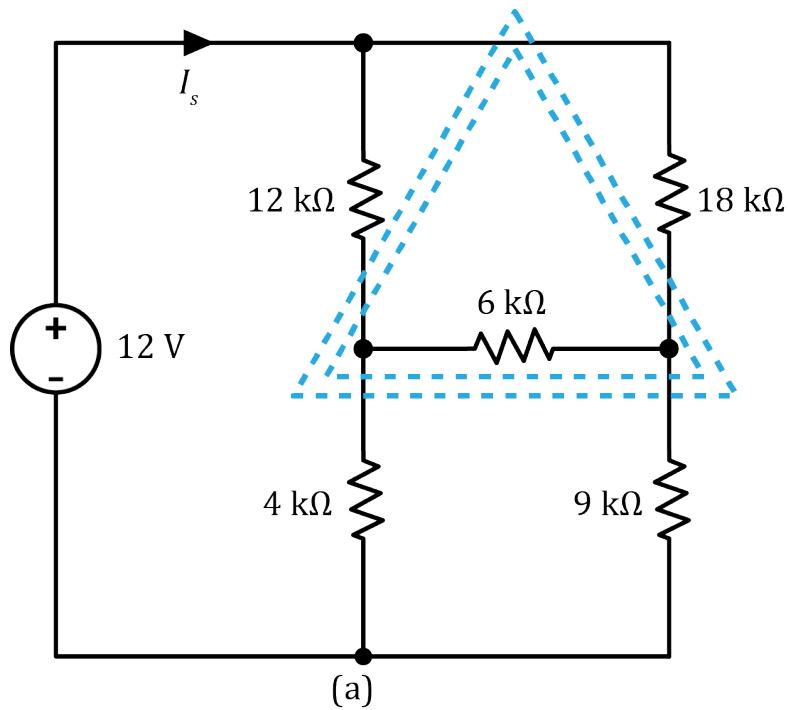




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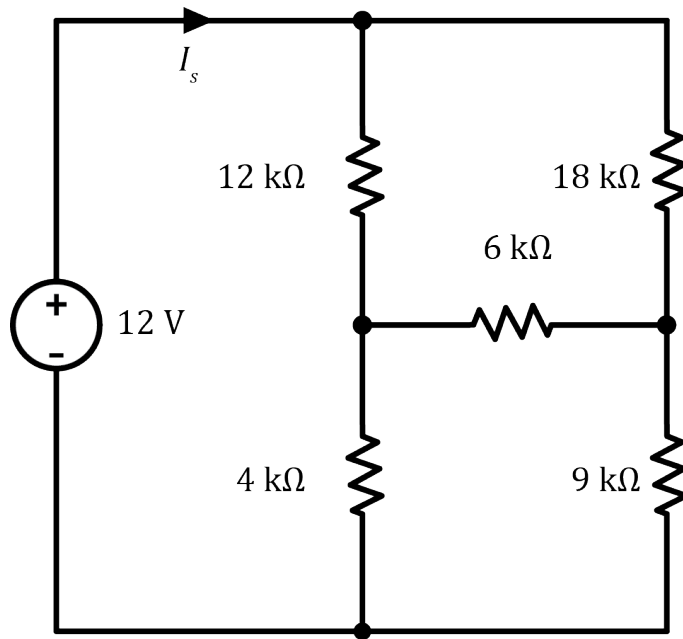


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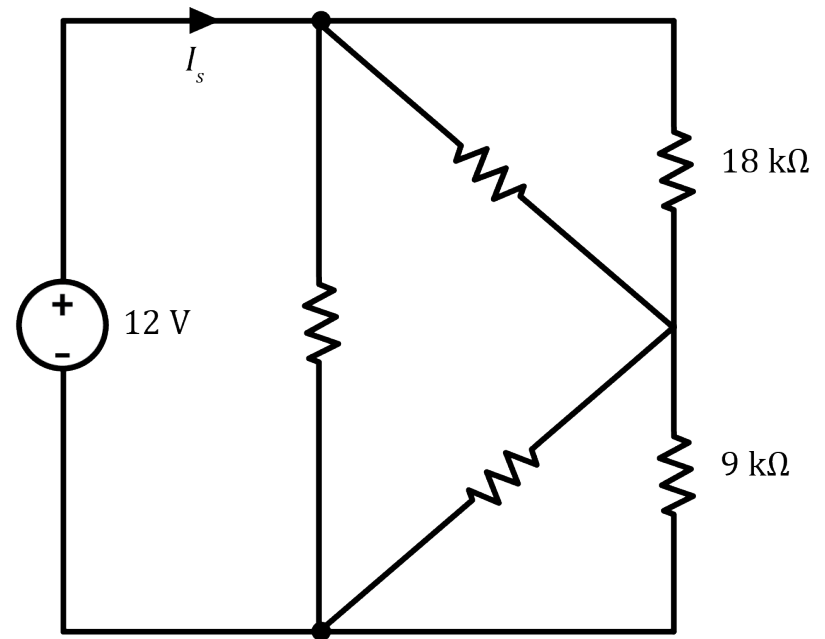


Por tanto,  $I_s = \frac{12 \text{ V}}{6\text{k} + 4\text{k}} = 1,2 \text{ mA}$

# Ejemplo 2

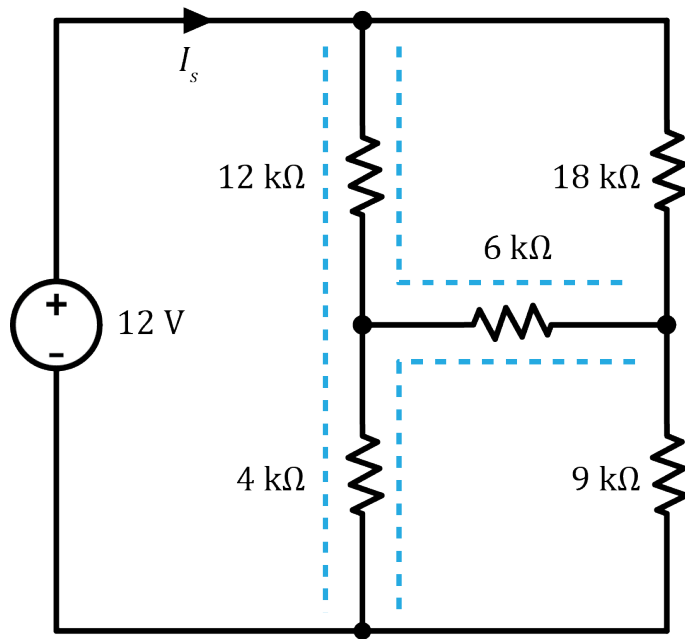


(a)

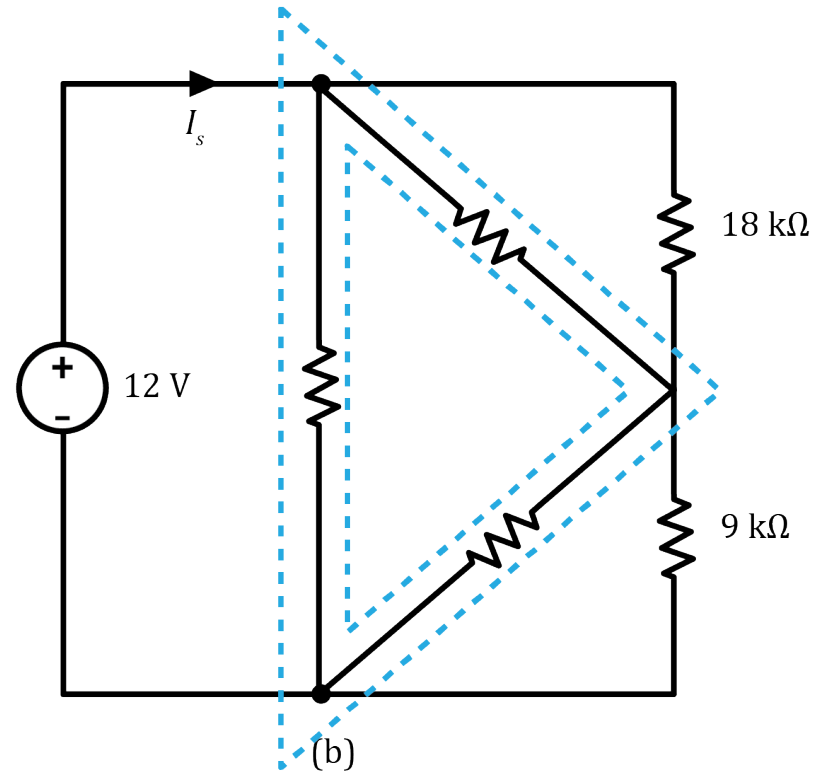


(b)

# Ejemplo 2

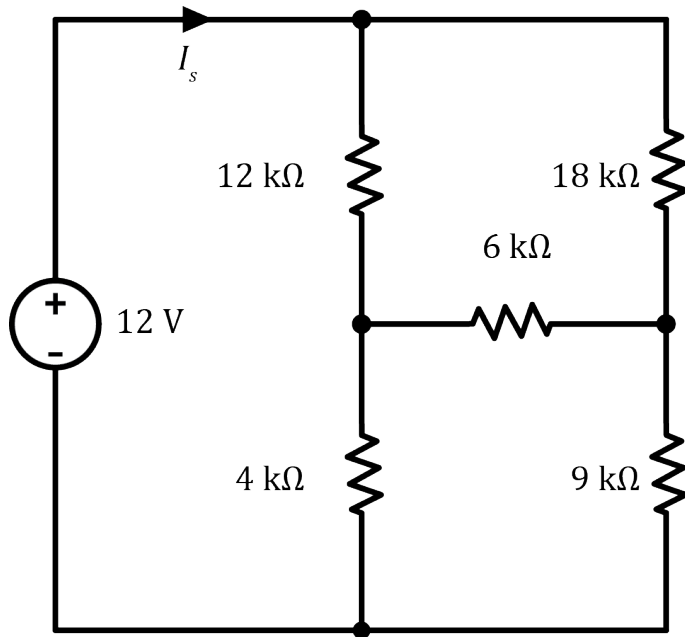


(a)

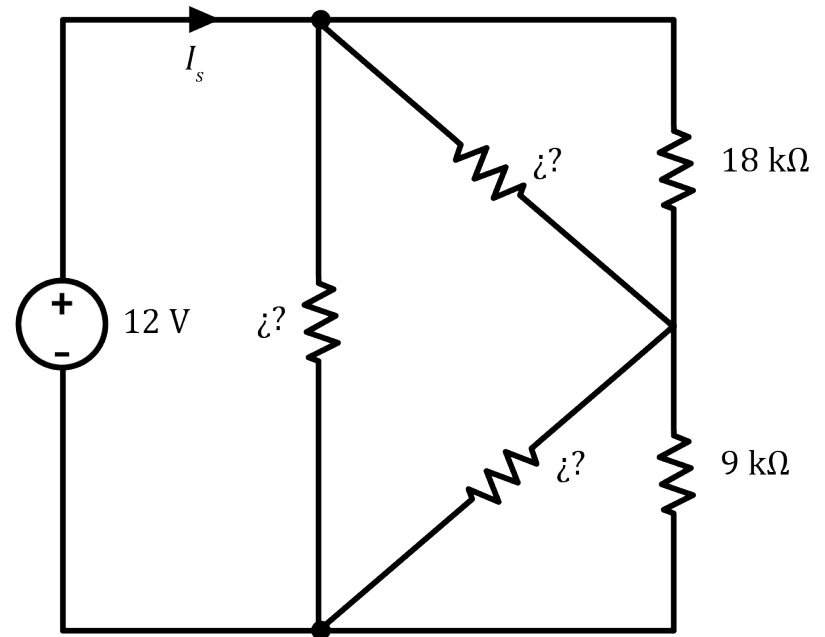


(b)

# Ejemplo 2

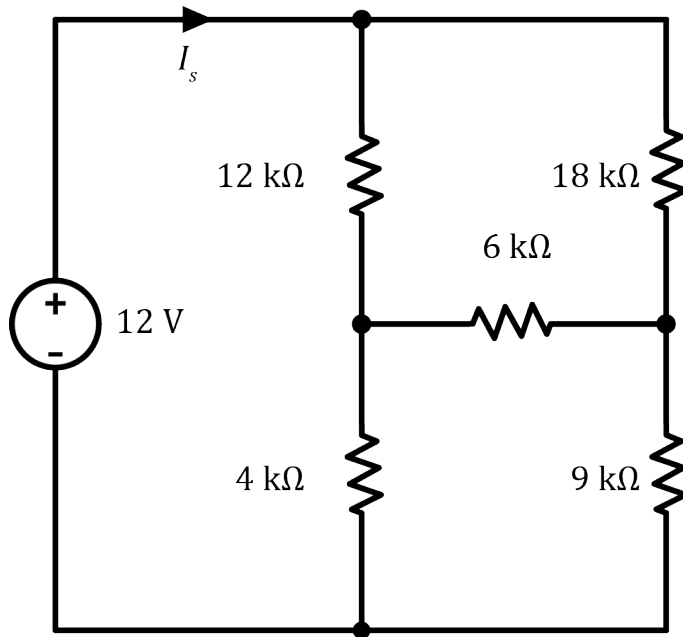


(a)

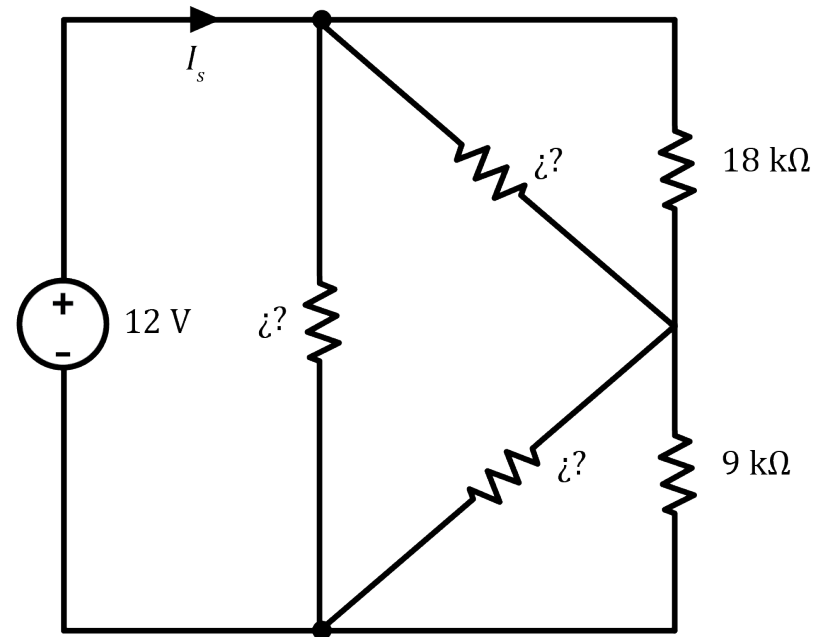


(b)

# Ejemplo 2



(a)



(b)

¿Cuál es el resultado?