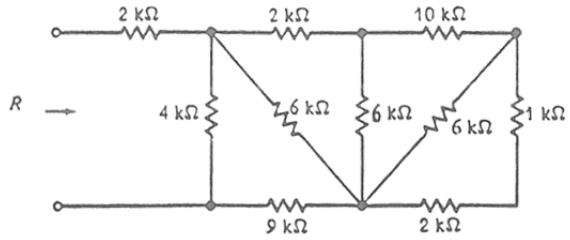
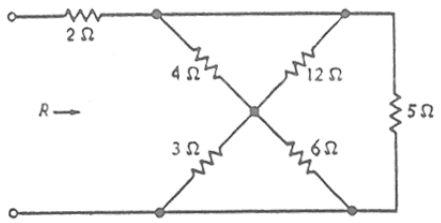
TEMA 0. KCL-KVL EN CIRCUITOS RESISTIVOS

0. PROBLEMA 1. Calcular la resistencia equivalente vista entre los terminales *A* y *B*
Solución: (a) 5kΩ (b) 4.5 kΩ (c) 6 kΩ (d) 12.5 Ω

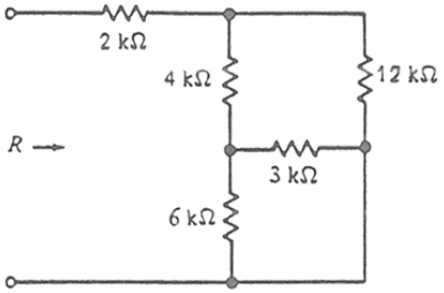
(a)



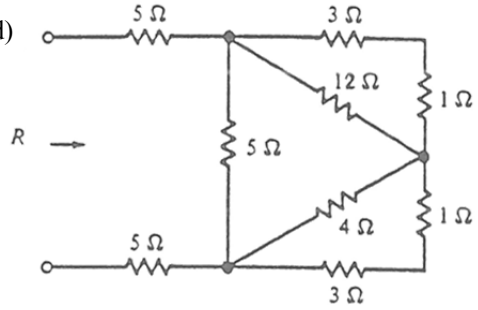
(b)



(c)

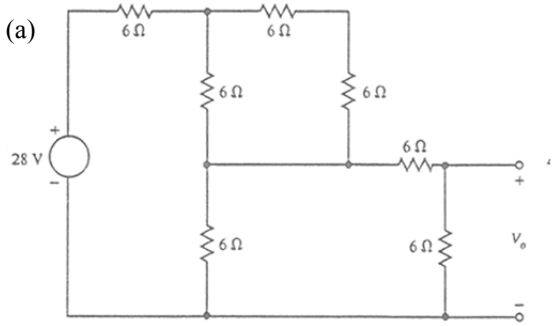


(d)

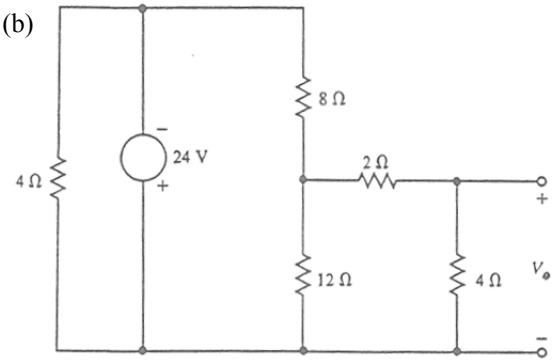


0. PROBLEMA 2. Calcular la tensión V_o en los siguientes circuitos.
Solución:(a) 4V (b) -16/3 V (c) 9V (d) 66V (e) 12V (f) 32/3 V

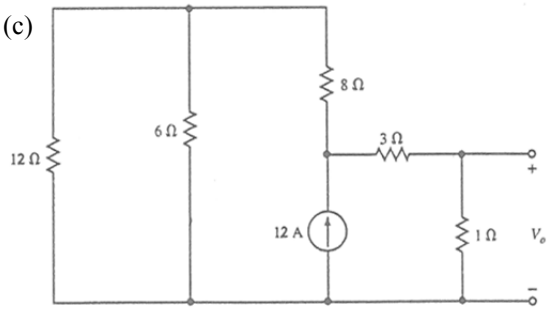
(a)



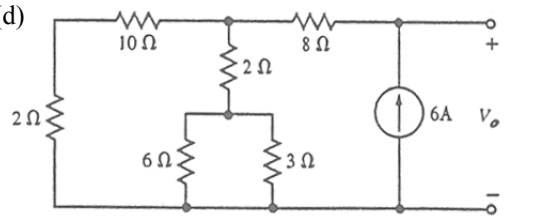
(b)



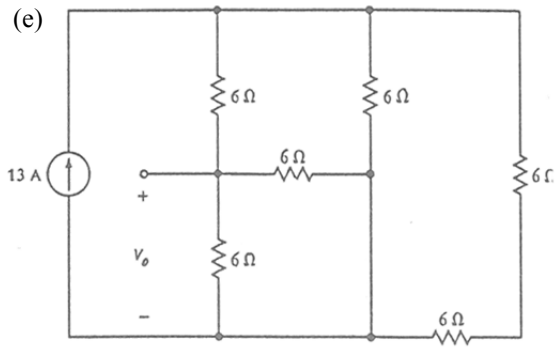
(c)



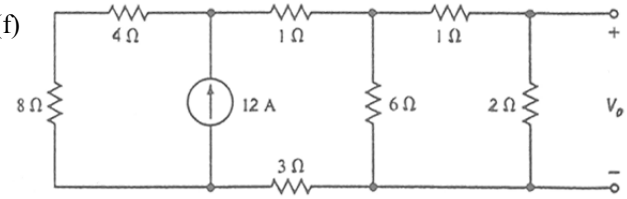
(d)



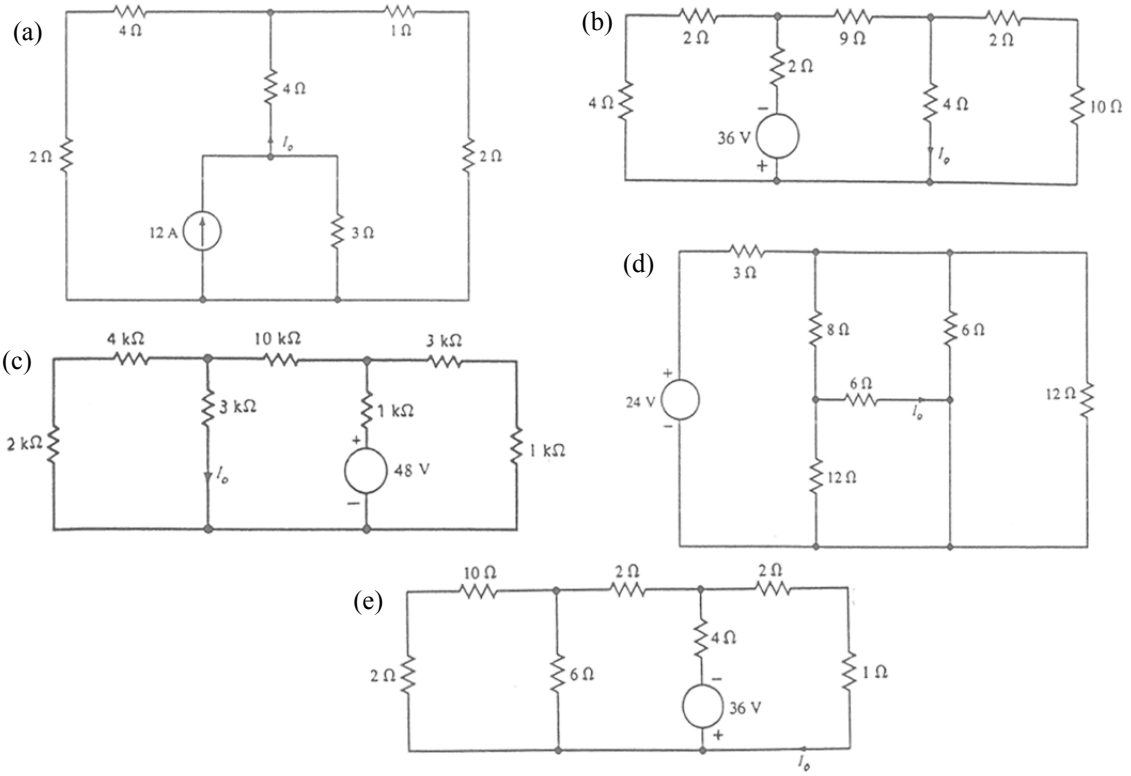
(e)



(f)

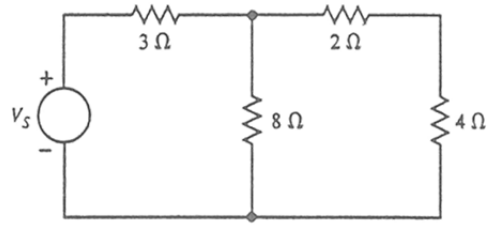


0. PROBLEMA 3. Calcular la corriente I_0 en los siguientes circuitos
Solución: (a) 4 A (b) -1.5 A (c) 2mA (d) 2/3 A (e) - 4 A



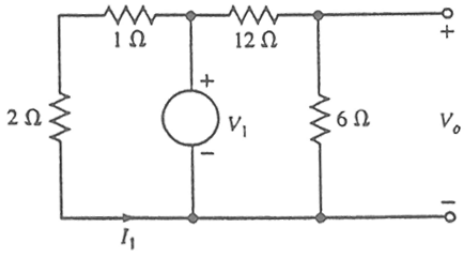
0. PROBLEMA 4. Calcular V_S si la potencia que se disipa en la resistencia de 4 Ω es 64W

Solución: 45V

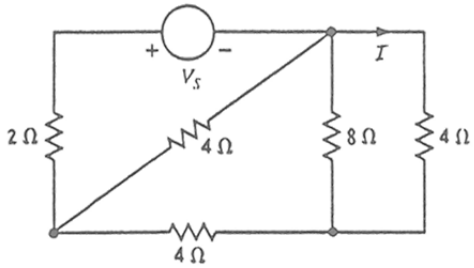


0. PROBLEMA 5. Calcular V_o si la corriente I_1 es 6A

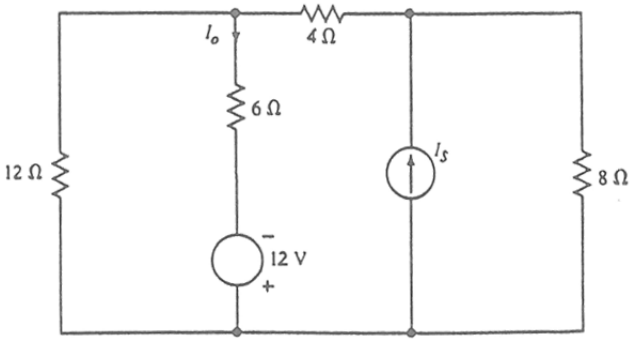
Solución: 6V



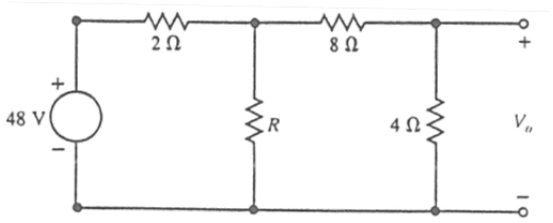
0. PROBLEMA 6. Calcular V_S si la corriente I es 4A
Solución: -72 V



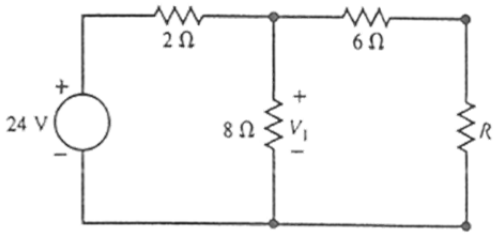
0. PROBLEMA 7. Calcular I_S si la corriente I_o es 4A
Solución: 9 A



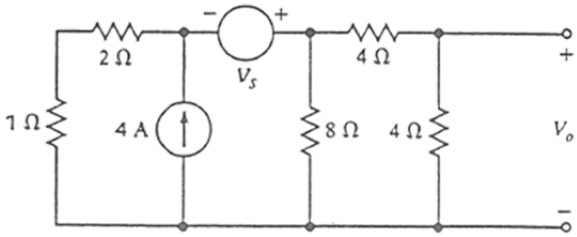
0. PROBLEMA 8. Calcular R si la tensión V_o es 12V
Solución: 12 Ω



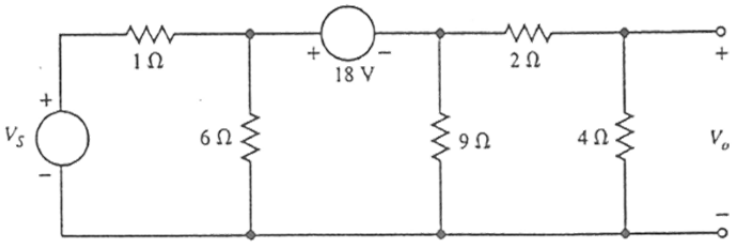
0. PROBLEMA 9. Calcular R si la tensión V_1 es 16V
Solución: 2 Ω



0. PROBLEMA 10. Calcular V_S si la tensión V_o es 12V en ambos circuitos
Solución: (a) 30V (b) 47V



(a)

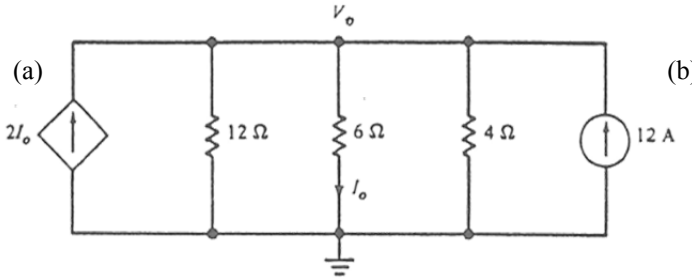


(b)

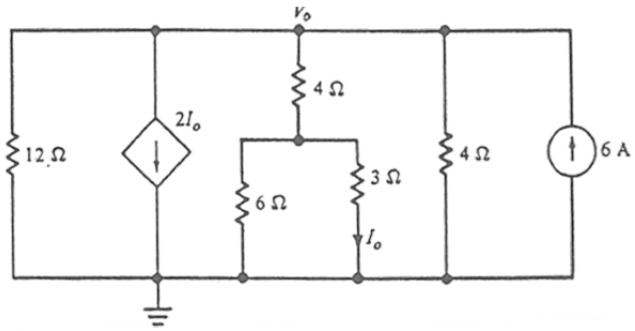
0. PROBLEMA 11. Calcular el voltaje V_o en los siguientes circuitos y la potencia que se disipa en las resistencias de 12 Ω.

Solución: (a) 72V; 432W (b) 8.3V; 5.75W (e) 6V; 3W; 0.75W (d) - 12V

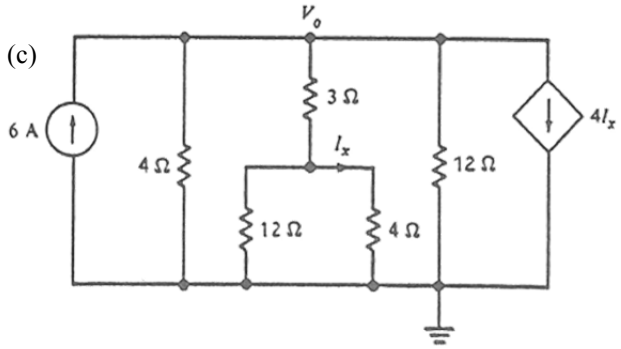
(a)



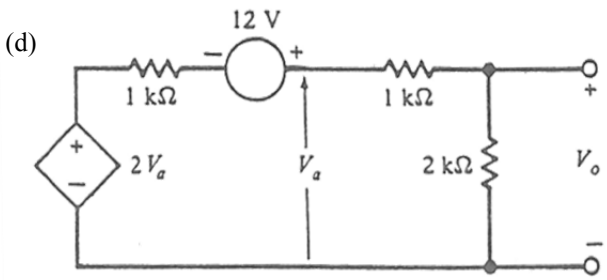
(b)



(c)

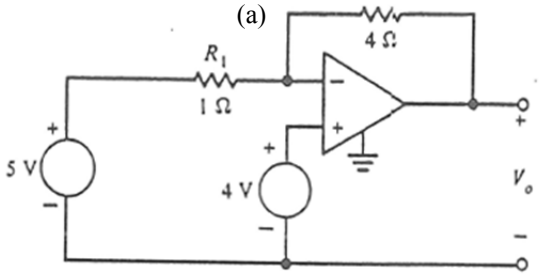


(d)

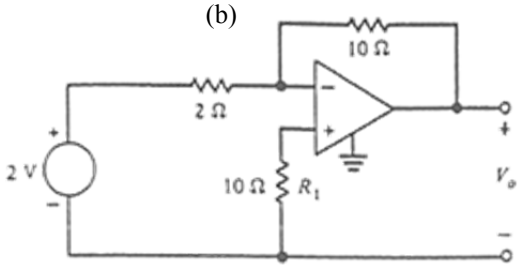


0. PROBLEMA 12. Bajo suposición de op-amp ideal, calcular la tensión de salida V_o y la ganancia K de cada etapa. En (b), ¿qué efectos produce la resistencia R_1?
Solución: (a) 0V; K=0 (b) -10 V; K=- 5

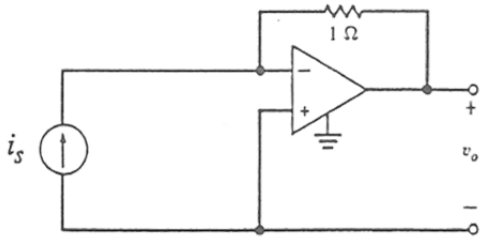
(a)



(b)

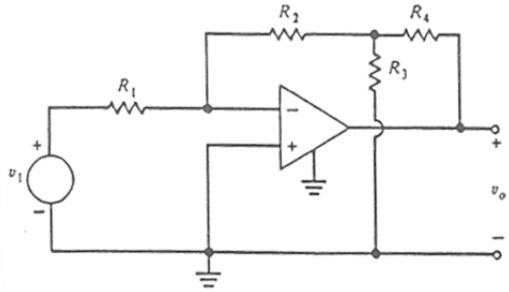


0. PROBLEMA 13. El circuito de la figura actúa como un conversor de corriente-tensión, también denominado amplificador de transconductancia. Suponiendo que el op-amp es ideal, calcular la relación v_o/i_S
Solución: 1 Ω

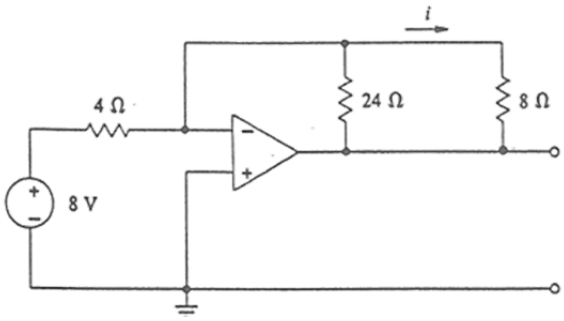


0. PROBLEMA 14. Determinar la relación v_o/v_1 bajo supuesto de op-amp ideal.

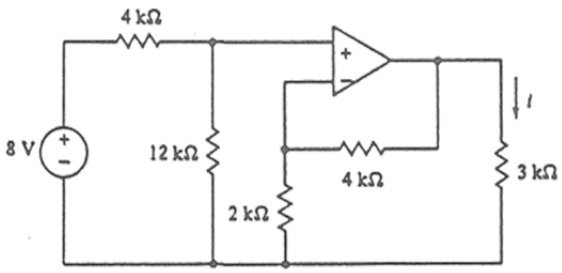
Solución: $-\frac{R_4}{R_1}\left[1+\frac{R_2}{R_3}+\frac{R_2}{R_4}\right]$



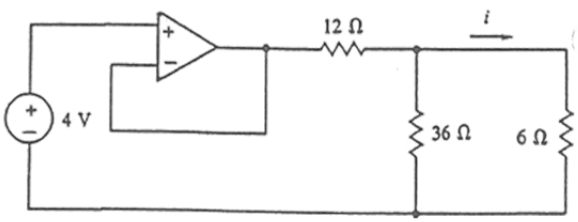
0. PROBLEMA 15. Admitiendo un modelo ideal para el op-amp, calcular las corrientes i indicadas en los siguientes circuitos.
Solución: (a) 1.5A (b) 6mA (e) 200 mA (d) 5 mA



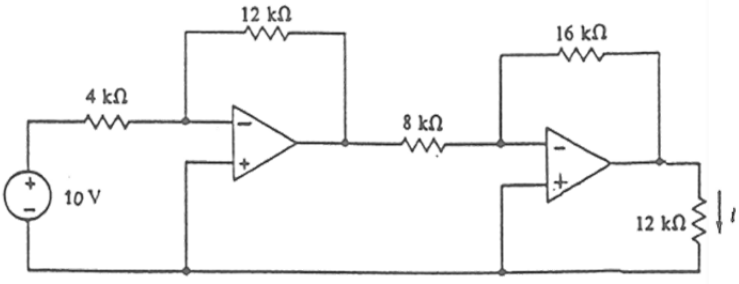
(a)



(b)



(c)



(d)