Clase 8 18.10.2012

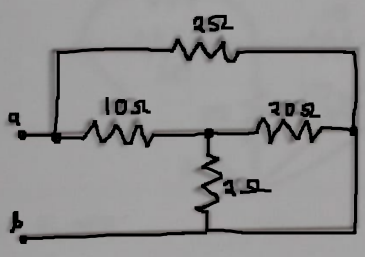
Reducción Serie-Paralelo

Acad. Circuitos — Reducción Serie-Paralelo — Circuitos de C.A y C.D

1. Calcular R equivalente en las terminales *ab* de los siguientes circuitos mostrados en los dibujos

Sol:

a)



Resultado:

$R_{ab} = 1.7105\Omega$

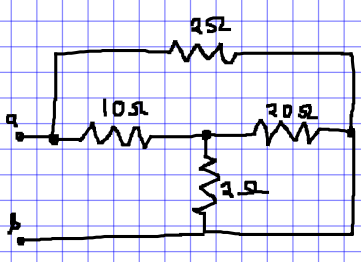
2.

Resultado:

$R_{ab} = 5\Omega$

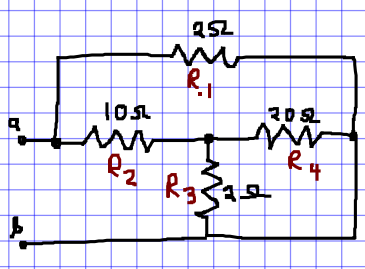
Sol:

a)

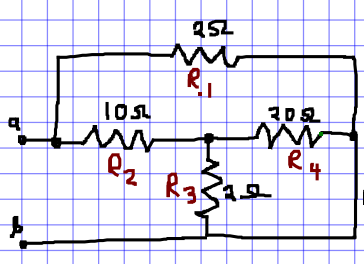


1) $R_{ab} = ?$

2)



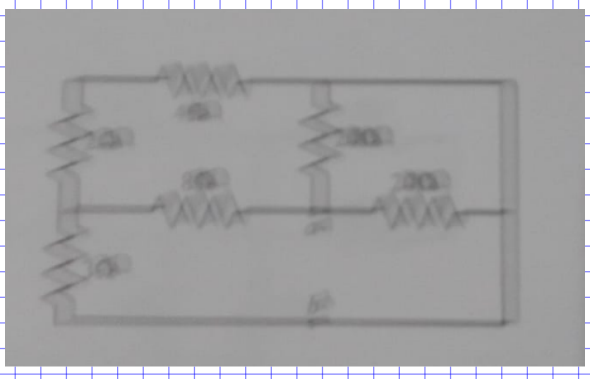
3) Red.



$R_a = R_3 \| R_4 = \frac{R_3 R_4}{R_3 + R_4} = \frac{(2)(20)}{2+20} = \frac{40}{22} = 1.81\Omega$

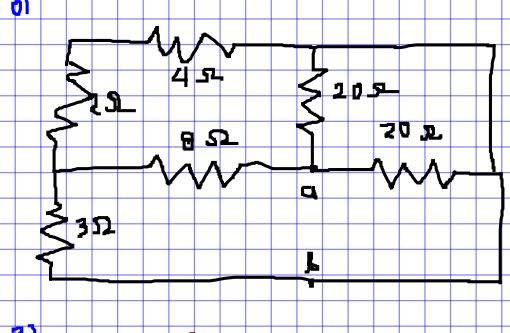
$R_b = R_2 + R_a = 10\Omega + 1.81\Omega = 11.81\Omega$

$R_{ab} = R_c = R_1 \| R_b = \frac{(2)(11.81)}{2+11.81} = \frac{23.62}{13.18} = 1.7105$



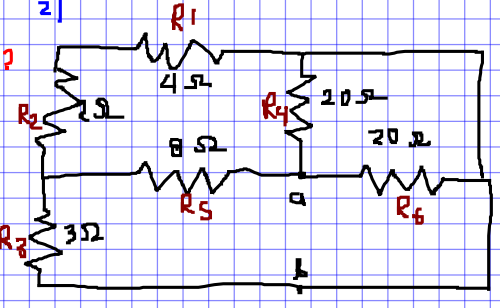
Sol:

a)

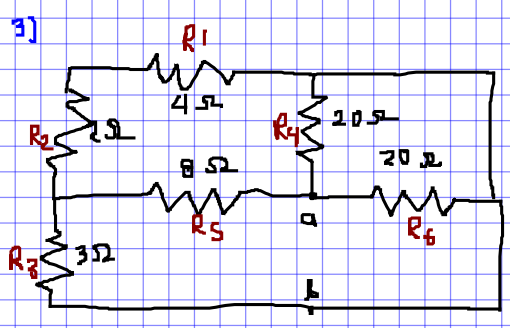


1) $R_{ab} = ?$

2)

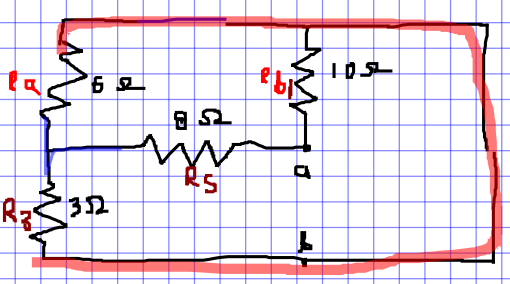


3)

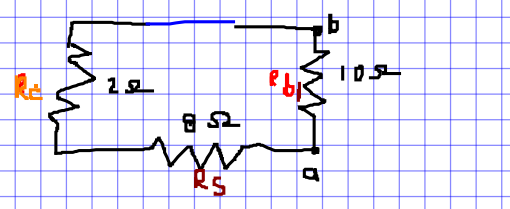


$R_a = R_1 + R_2 = 4\Omega + 2\Omega = 6\Omega$

$R_b = R_4 \| R_6 = \frac{20 \cdot 20}{20+20} = \frac{400}{40} = 10 = \frac{20}{1} = \frac{R}{2} = 10$



$R_c = R_a \| R_3 = \frac{(6)(3)}{6+3} = \frac{18}{9} = 2$



$R_d = R_5 + R_c = 8\Omega + 2\Omega = 10\Omega$

$R_{ab} = R_b \| R_d = \frac{(10)(10)}{20} = 5\Omega$

Cont. P 4.4 - 7

$-1.84 V_a \quad -2.63 V_b \quad -1.55 V_c = -55.58V \quad \cdots (1) \qquad V_a = ?$

$V_a - V_c = 31V \quad \cdots (2)$ Pas. V_a → $V_a = 31 + V_c$

$V_b - V_c = 26V \quad \cdots (3)$ Pas. V_b → $V_b = 26 + V_c$

$-1.84(31 + V_c) - 2.63(26 + V_c) - 1.55 V_c = -55.58V \quad \cdots (4)$

$-57.04 - 1.84 V_c - 68.38 - 2.63 V_c - 1.55 V_c = -55.58V$

$-6.02 V_c = 69.84V$

$V_c = \frac{69.84V}{-6.02} = -11.60V$

De (2) res. V_a:

$V_a - V_c = 31V \quad \cdots (2)$

$V_a = 31V + V_c = 31V - 11.60V = 19.4V$