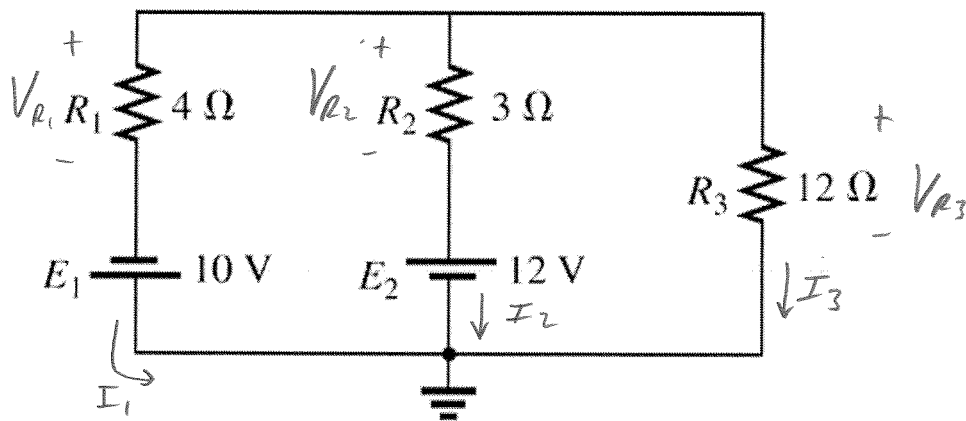


Breakout #1

- Find P_{E1} , P_{R2} and the current through R_3



KVL $-10 + V_{R1} - V_{R2} - 12 = 0$

$4I_1 - 3I_2 = 22 \quad (1)$

KVL $+12 + V_{R2} - V_{R3} = 0$

$3I_2 - 12I_3 = -12 \quad (2)$

RELATION
→

KCL $-I_1 - I_2 - I_3 = 0$

or $I_1 + I_2 + I_3 = 0 \quad (3)$

$4I_1 - 3I_2 + 0I_3 = 22$

$0I_1 + 3I_2 - 12I_3 = -12$

$I_1 + I_2 + I_3 = 0$

SOLVING YIELDS

$I_1 = 3.063 \text{ A}$

$I_2 = -3.25 \text{ A}$

$I_3 = 187.5 \text{ mA}$

$$P_{E_1} = (E_1)(I_1) = (10V)(3.063A) = \boxed{30.63W}$$

$$P_{R_2} = (I_2)^2 R_2 = (-3.25A)^2 (3\Omega) = \boxed{31.69W}$$

$$I_3 = 187.5mA \text{ DOWN}$$