Basic analysis 003
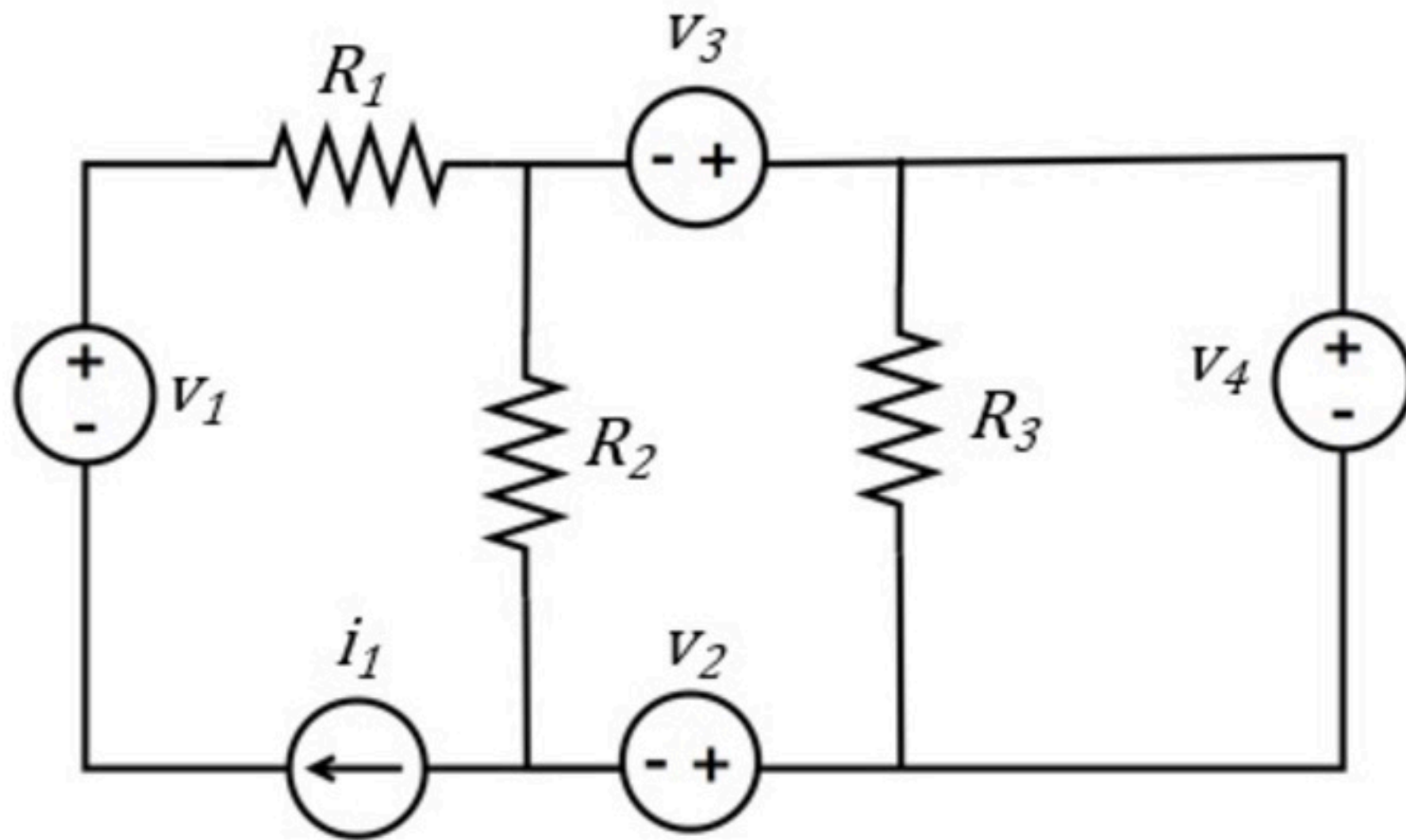
Determine the power received by each of the three resistors.

Given Variables:

v1 : 3 V

v2 : 5 V

v3 : 1 V

v4 : 2 V

i1 : 1 A

R1 : 2 ohm

R2 : 3 ohm

R3 : 4 ohm

Calculate the following:

P1 (W) :

P2 (W) :

P3 (W) :

Hint: Find currents using KCL and KVL

Determine the power received by each of the three resistors.

v1 = 2 V	
v2 = 3 V	
v3 = 4 V	
v4 = 2 V	
i1 = 4 A	
R1 = 2 Ω	
R2 = 1 Ω	
R3 = 4 Ω	
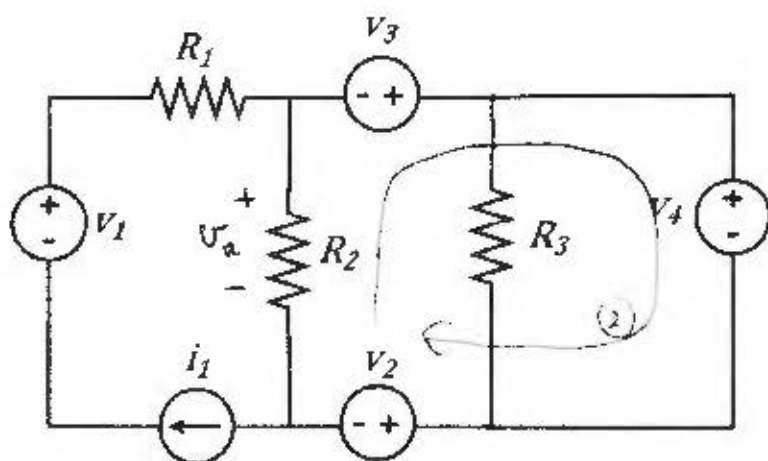
(a) R_1 · $P = R_1 \cdot i_1^2 = 2 \cdot 4^2$ $\boxed{P_{R_1} = 32\,W}$

(b) R_3 : $P = \dfrac{v_4^2}{R_3} = \dfrac{4}{4}$ $\boxed{P_{R_3} = 1\,W}$

(c) KVL in ② : $v_a + v_3 - v_4 - v_2 = 0$

$v_a = -4 + 2 + 3 = 1\,V$

$P = \dfrac{v_a^2}{R_2} = \dfrac{1}{1}$ $\boxed{P_{R_2} = 1\,W}$