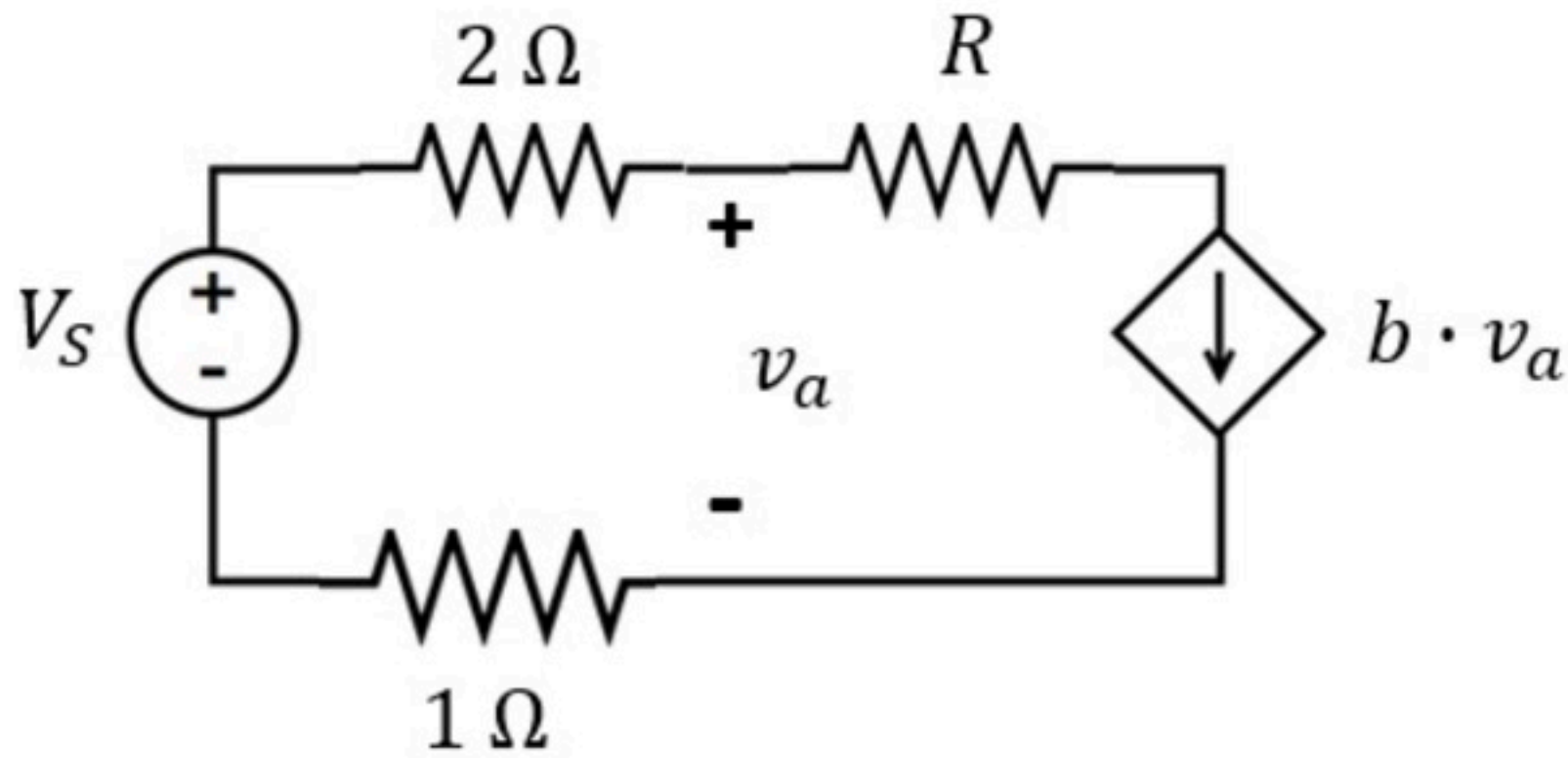


# Basic analysis 013

No more attempts left.

Find  $v_a$ .

What is the power  $P$  received by the dependent source?



Given Variables:

$V_S$  : 7 V

$R$  : 2 ohm

$b$  : 2 A/V

Calculate the following:

$v_a$  (V) :

$P$  (W) :

Hint: KVL also works when the voltage drop is not across an element.

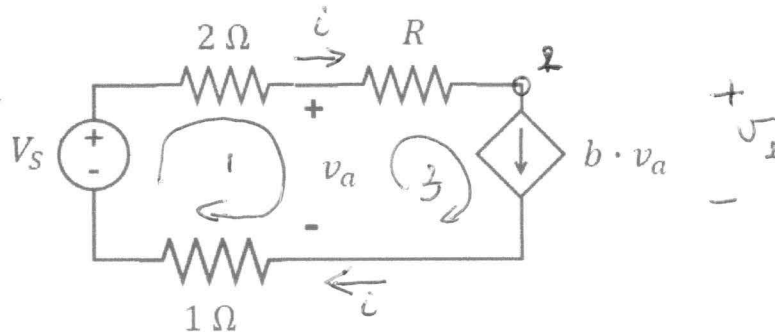
Find  $v_a$ .

What is the power  $P$  received by the dependent source?

$$V_s = 7 \text{ V}$$

$$R = 2 \Omega$$

$$b = 2 \text{ A/V}$$



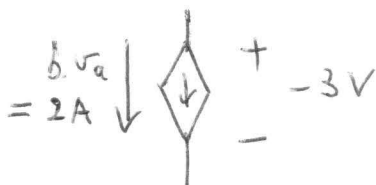
$$\text{KVL 1: } V_s = 2 \cdot i + v_a + 1 \cdot i \Rightarrow V_s = 3i + v_a \quad (1)$$

$$\text{KCL 2: } i = b v_a \quad (2)$$

$$(2) \text{ in } (1): V_s = 3b v_a + v_a = 7 \cdot v_a \Rightarrow \boxed{v_a = 1 \text{ V}}$$

$$\stackrel{(2)}{\Rightarrow} i = 2 \cdot v_a = 2 \text{ A}$$

$$\text{KVL 3: } v_a = R \cdot i + v_2 \Rightarrow v_2 = 1 - 2 \cdot i = -3 \text{ V}$$



PASSIVE SIGN CONVENTION

$$P = (-3) \cdot 2 = -6$$

$$\boxed{P = -6 \text{ W RECEIVED}}$$