PP - Basic concepts 001

Problem has been graded.

What is the current i flowing through the element at time $t = 0.25$ seconds, when the charge flow is $q(t)$?

$$q(t) = \frac{6}{\pi} \cdot cos(10\pi t) \quad \mu C$$

Given Variables:

. : . .

Calculate the following:

i (mA) :

-0.06 ✓

| Hint: Pay attention to the units

PP - Basic concepts 002

A current of 5 mA is flowing through a conductor. What is the amount of charge q that has passed through any cross-section of this conductor in 10 seconds?

Given Variables:
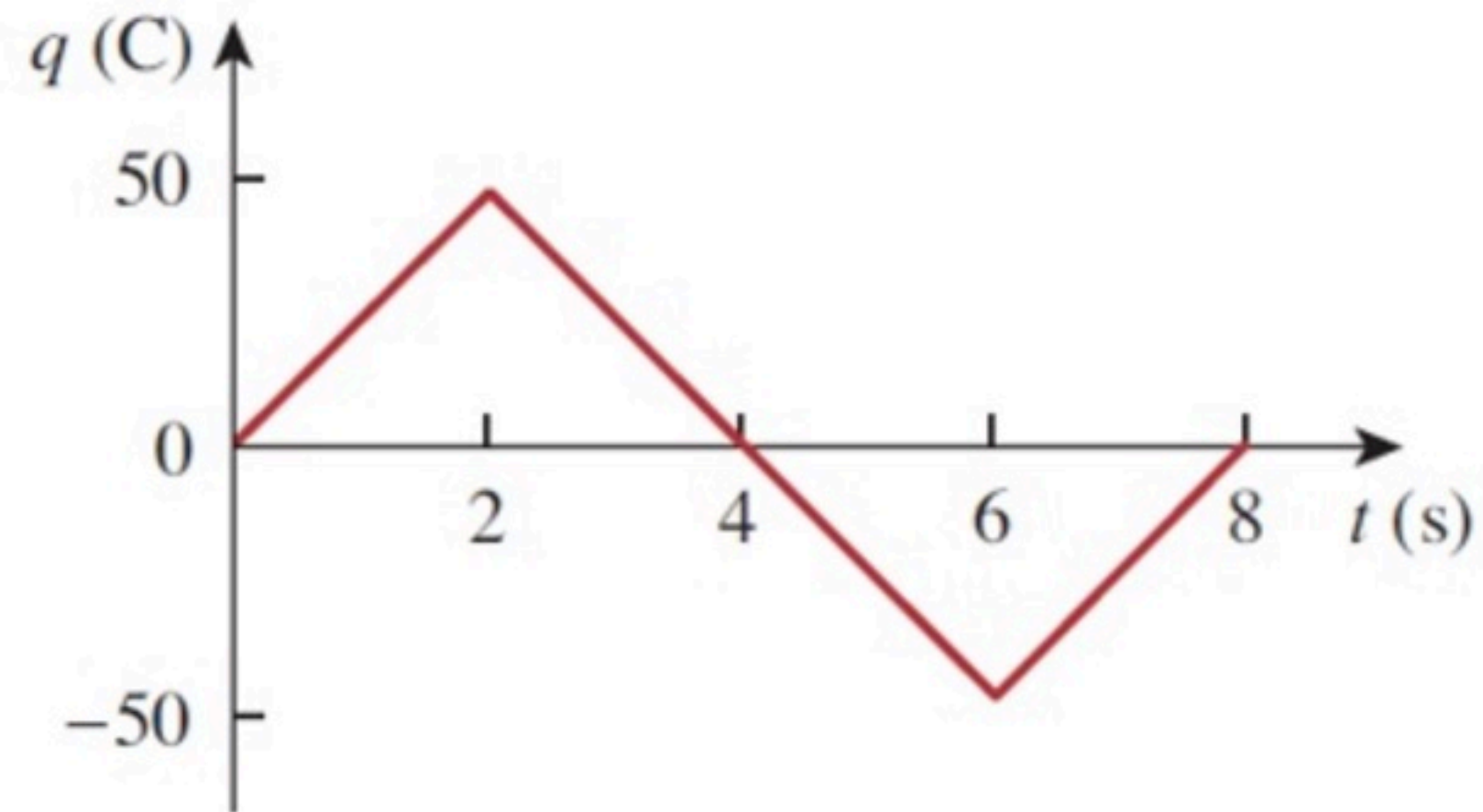
. : . .

Calculate the following:

q (C) :

0.05 ✓ ✓

| Hint: Pay attention to the units

Problem has been graded.

What is the current i flowing through the element at time $t = 7$ seconds, when the charge flow is as shown in the figure?

Given Variables:

. : . .

Calculate the following:

i (A) :

25 ✓

| Hint: Current is the derivative of charge at a certain time

Problem has been graded.

The current flowing through an element is shown in the figure. At time $t = 0$, the charge that has passed through the element already is 2 C.

What is the total amount of charge q_1 that has passed through the element at time $t_1 = 3$ seconds?

What is the total amount of charge q_2 that has passed through the element at time $t_2 = 5$ seconds?

Given Variables:

. : . .
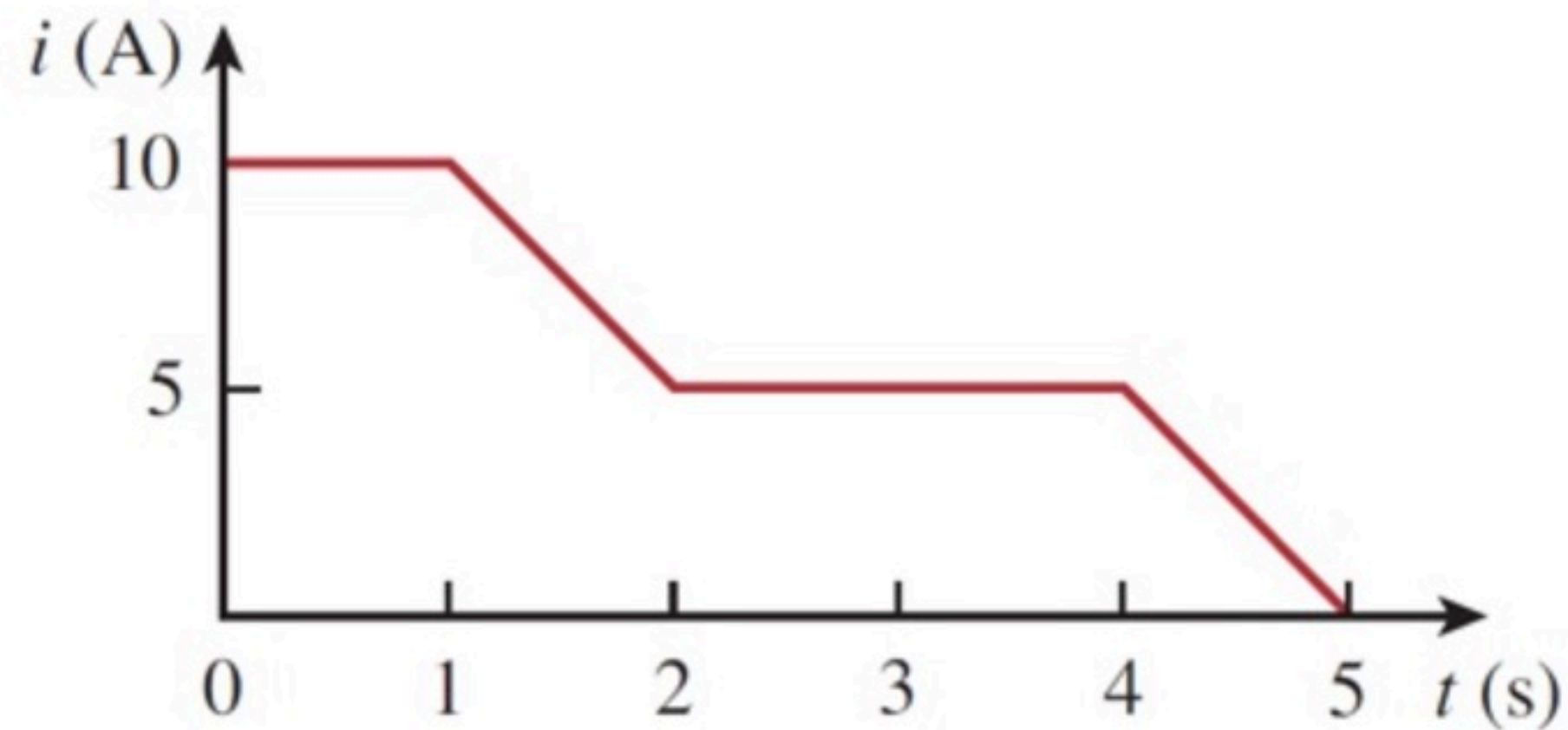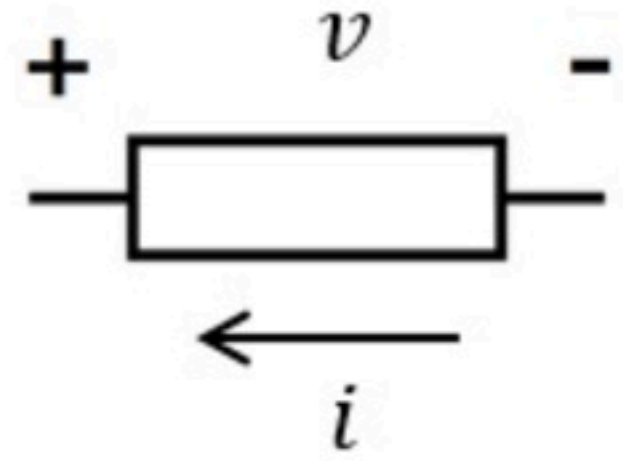
Calculate the following:

q1 (C) :

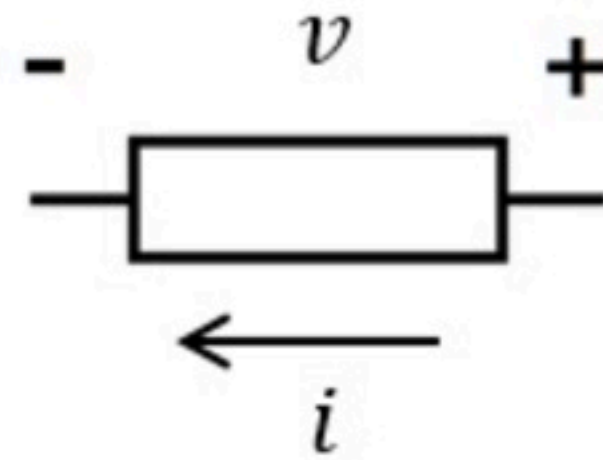24.5 ✓

q2 (C) :

32 ✓

Hint: Don't forget the initial charge
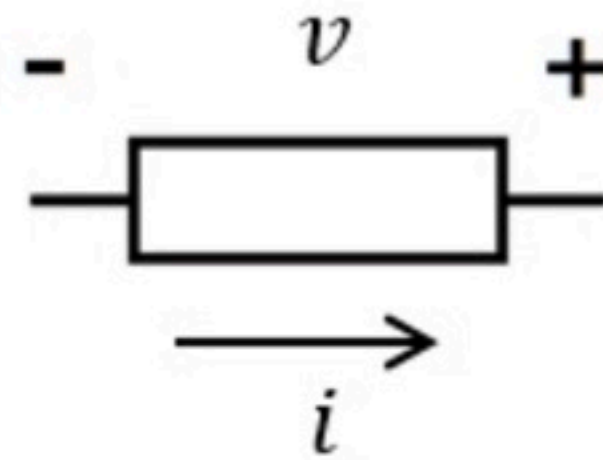
PP - Basic concepts 005

Find the power P_1 received by this element:

Find the power P_2 received by this element:

Find the power P_3 supplied by this element:

Given Variables:

v : 2 V

i : -3 A

Calculate the following:

P1 (W) :

6 ✓

P2 (W) :

-6 ✓

P3 (W) :

-6 ✓

Hint: Convert first to passive sign convention

The current flowing through an element and the voltage across this element are shown in the figures.

Find the total energy E received by the element for the period time $0 < t < 3$ s.

Given Variables:
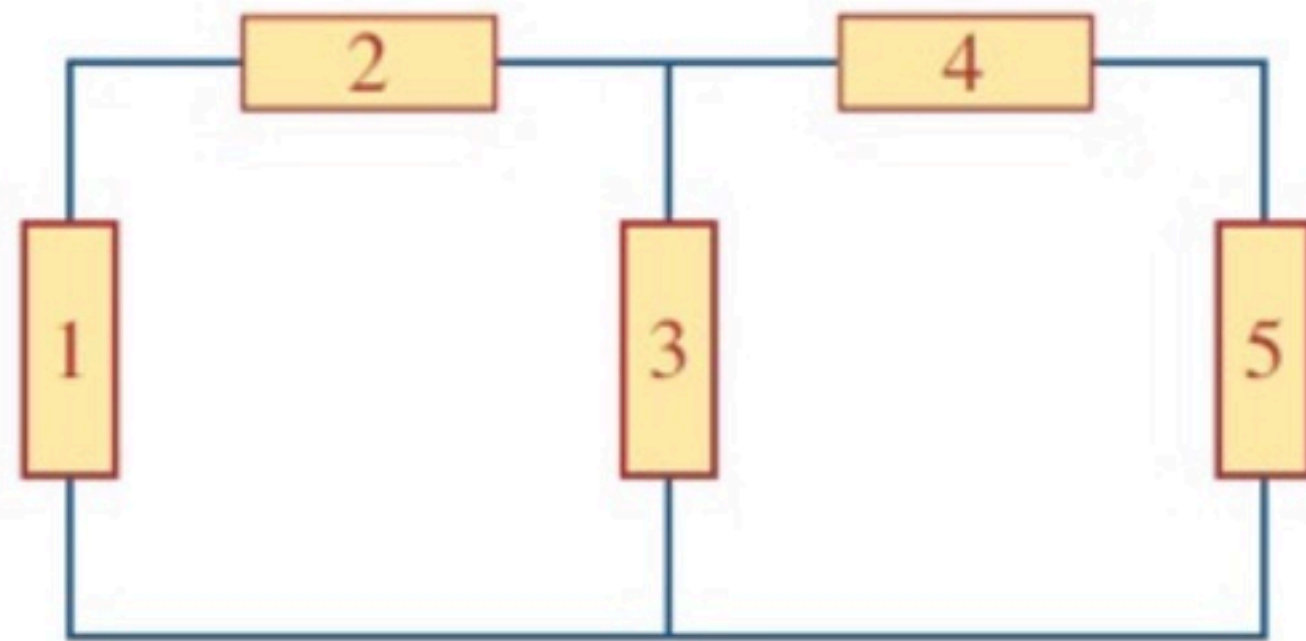
. : . .
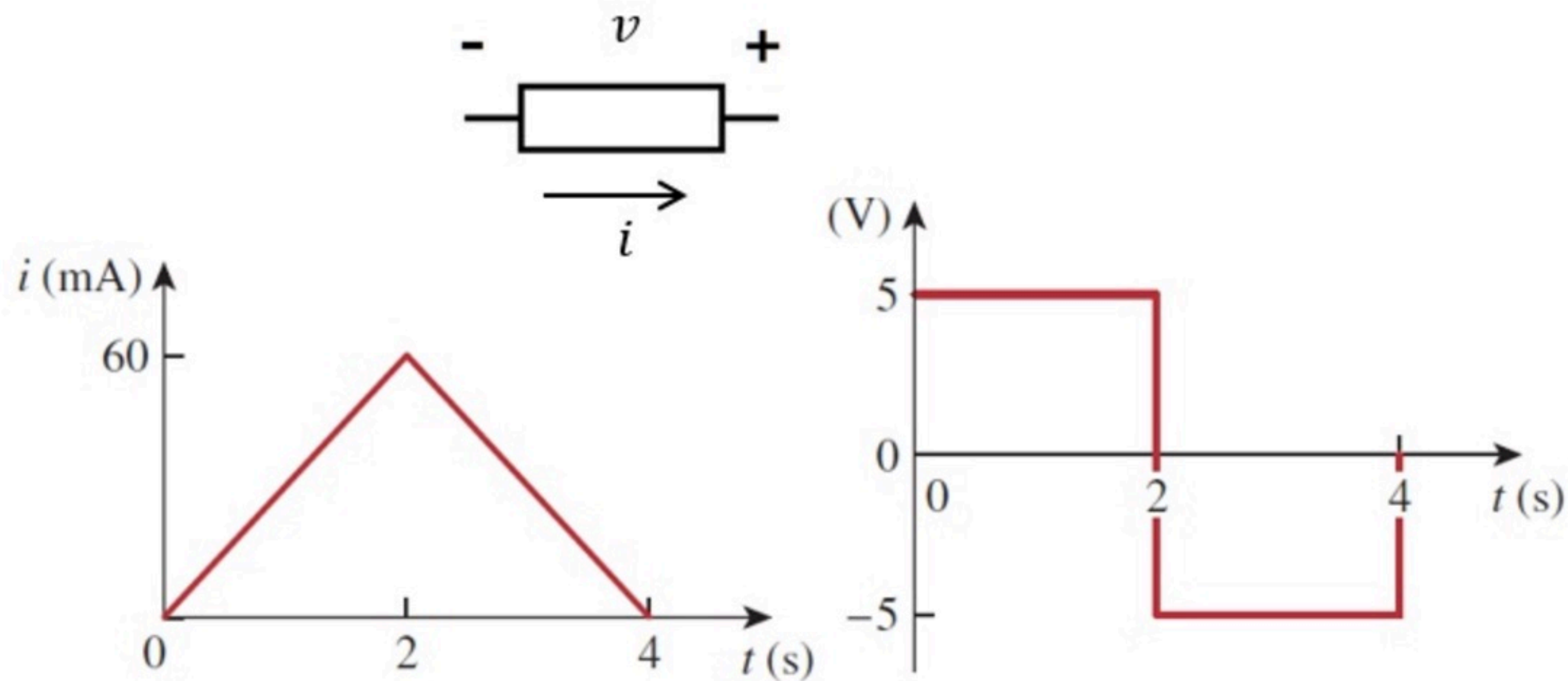
Calculate the following:

E (J) :

-0.075   ✓

Hint: Convert first to passive sign convention and check units

PP - Basic concepts 008

The figure shows a circuit with 5 circuit elements.

Element 1 supplies 3 W
Element 2 supplies -5 W
Element 3 receives 8 W
Element 4 receives -1 W

How much power P does element 5 supply?

Given Variables:

. : . .

Calculate the following:

P (W) :

9 ✓

| Hint: Use conservation of energy