X

Unit 5 - Week 3: Power and energy in electrical elements; Circuit analysis methods

Course outline

How to access the portal

Pre-requisite Assignment

Week 1: Preliminaries; Current and voltage; Electrical elements and circuits; Kirchhoff's laws; Basic elements; Linearity

Week 2: Elements in series and parallel; Controlled sources

Week 3: Power and energy in electrical elements; Circuit analysis methods

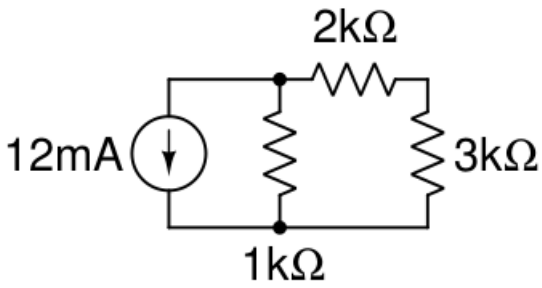
- Power and energy absorbed by electrical elements
- Power and energy in a resistor
- Power and energy in a capacitor

Assignment 3

The due date for submitting this assignment has passed. **Due on 2018-09-05, 23:59 IST.**
As per our records you have not submitted this assignment.

1)

Determine the power *delivered* by the current source in the figure below.



(The answer must be in **milliwatts (mW)**. Round off fractional answers to one decimal place.)

No, the answer is incorrect.
Score: 0

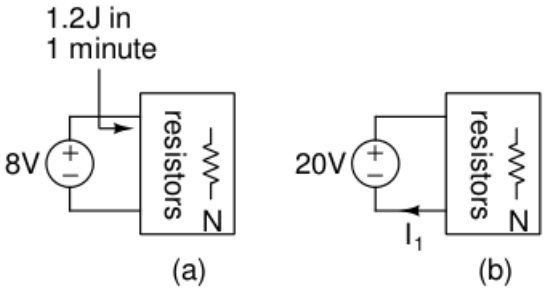
Accepted Answers:
(Type: Numeric) 120

1 point

2)

energy in a current source
Goals of circuit analysis
Number of independent KCL equations
Number of independent KVL equations and branch relationships
Analysis of circuits with a single independent source
Analysis of circuits with multiple independent sources using superposition
Superposition: Example
Quiz : Assignment 3
Week 3 - Feedback: Basic Electrical Circuits
Week 4: Nodal analysis
Week 5 : Mesh analysis; Circuit theorems
Week 6: More circuit theorems; Two port parameters
Week 7: Two port parameters continued; Reciprocity in resistive networks
Week 8: Opamp and negative feedback; Example circuits and additional topics
Week 9 :First Order Circuits
Week 10 : First order circuits with time-varying inputs
Week 11: Second

In the figure below, in the circuit on the left, the network N which consists only of resistors draws an energy of 1.2 J over a period of 1 minute. The same circuit is driven by a 20 V source in (b). Determine the current I_1.



(The answer must be in **milliamperes (mA)**. Round off fractional answers to one decimal place.)

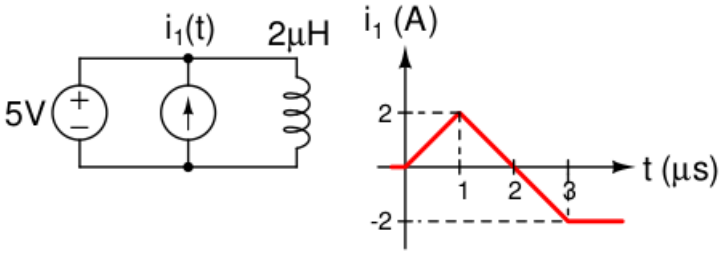
No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) 6.25

0 points

3)

Determine the energy *delivered* by the voltage source from $t = 0$ to $t = 3\,\mu s$ in the figure below. The inductor current is zero at $t = 0$.



(The answer must be in **microjoules (μJ)**. Round off fractional answers to one decimal place.)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) 51.25

0 points

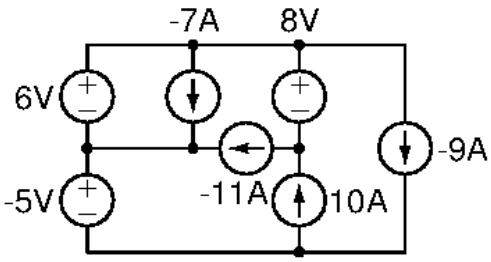
4)

order system response

Week 12: Direct calculation of steady state response from equivalent components

Video Download

Determine the power *delivered* by the 6 V voltage source in the figure bel



In case your answer is fractional, round it off to two decimal places.
Your answer must be the numerical value of the power in watts (W).
(If the answer is 2 W, enter 2
If the answer is -3 W, enter -3
If the answer is 50 mW, enter 0.05 or 5e-2 etc.)

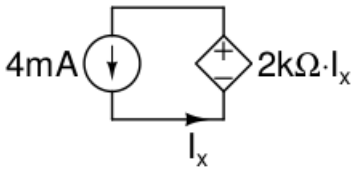
No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) -222

1 point

5)

In the figure below, determine the power *delivered* by the 4 mA current source.



(The answer must be in **milliwatts (mW)**. Round off fractional answers to one decimal place.)

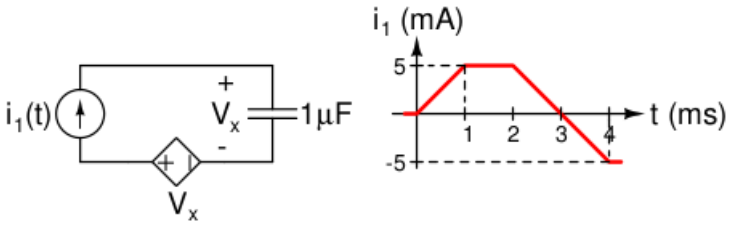
No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) -32

1 point

6)

In the figure below, determine the energy *delivered* by the current source from $t = 0$ to $t = 4$ ms.



(The answer must be in **microjoules** (μJ). Round off fractional answers to one decimal place.)

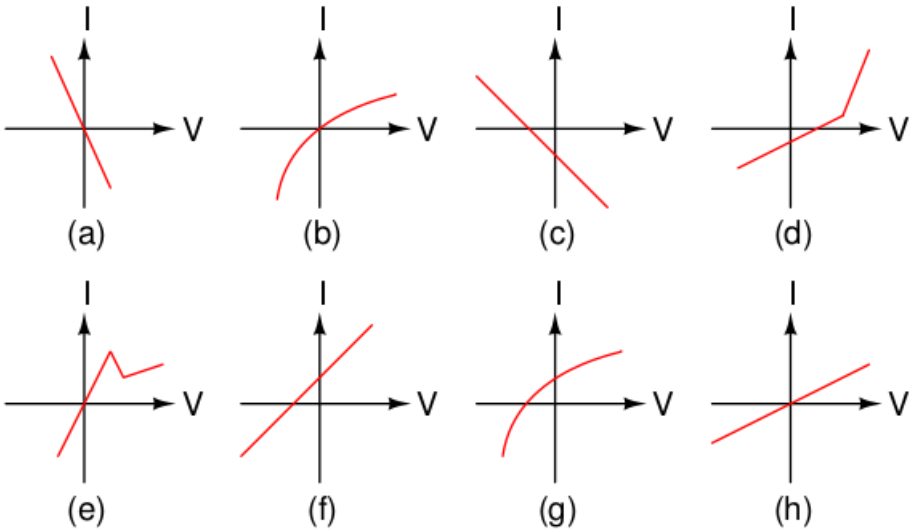
No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) 0

1 point

7) ***1 point***

In the figure below, identify the elements that are passive. There maybe more than one.



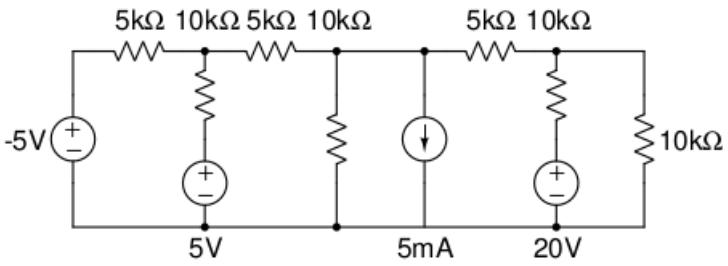
- [ ] (a)
- [ ] (b)
- [ ] (c)
- [ ] (d)
- [ ] (e)
- [ ] (f)
- [ ] (g)
- [ ] (h)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(b)
(e)
(h)

8)

Determine the power *delivered* by the -5 V source in the figure below.



(The answer must be in **milliwatts (mW)**. Round off fractional answers to one decimal place.)

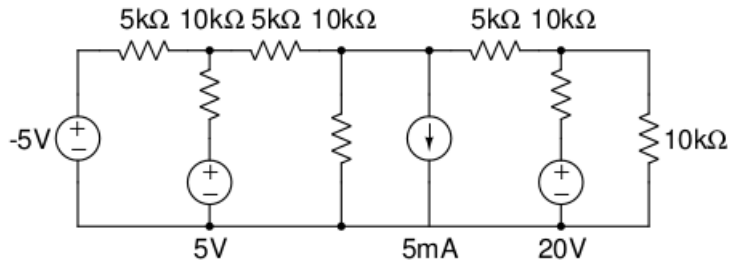
No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) -1.25

0 points

9)

Determine the number of independent KCL equations that can be written for the circuit below (treat each two-terminal element as a branch).



Your answer must be the number of equations.

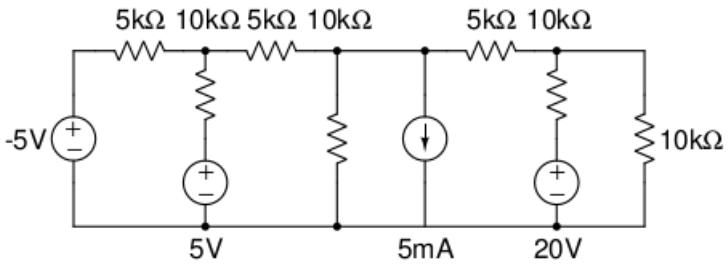
No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) 6

1 point

10)

Determine the number of independent KVL equations that can be written for the circuit below (treat each two-terminal element as a branch).



Your answer must be the number of equations.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) 5

1 point

Previous Page End