

ECSE 2010  
Electric Circuits  
Exam 1  
Spring 2004

Name \_\_\_\_\_

Section Number (please circle one)

**1**

MTR  
10-12

**2**

MWR  
4-6

**3**

MTR  
2-4

Problem No.	Pts.	Score
1	20pts	
2	20pts	
3	20pts	
4	20pts	
5	20pts	
Total	100pts	

Please Note:

- \* Place all your answers in the spaces provided.
- \* You MUST show your work to receive any credit.

Problem 1 (20pts)

Name \_\_\_\_\_

Section Number (please circle one)

**1**

MTR  
10-12

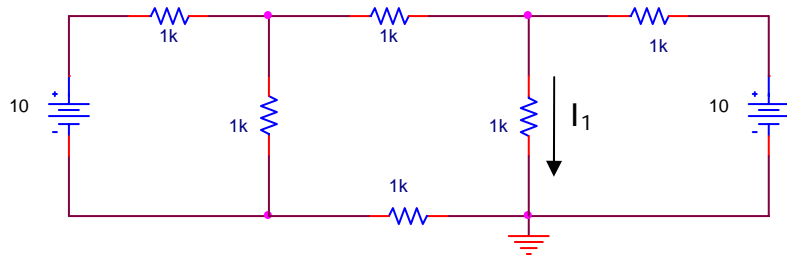
**2**

MWR  
4-6

**3**

MTR  
2-4

a.) Find  $I_1$  for the circuit shown. (10pts)



$I_1$	
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Problem 1 (cont)

Name \_\_\_\_\_

Section Number (please circle one)

**1**

MTR  
10-12

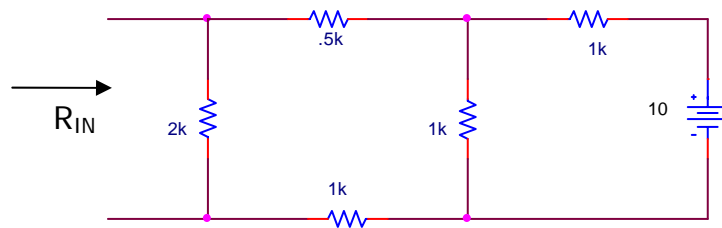
**2**

MWR  
4-6

**3**

MTR  
2-4

b.) Find  $R_{IN}$  for the circuit shown. (10pts)



$R_{IN}$	
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Problem 2 (20pts)

Name \_\_\_\_\_

Section Number (please circle one)

**1**

MTR  
10-12

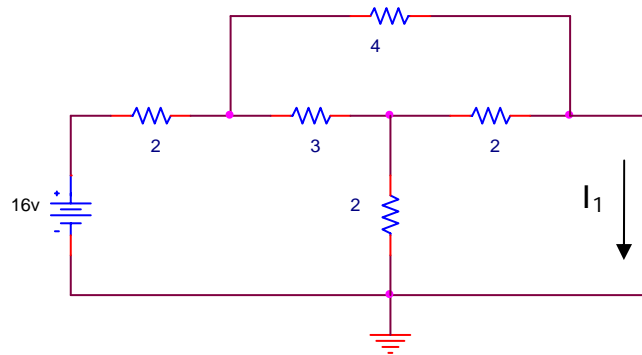
**2**

MWR  
4-6

**3**

MTR  
2-4

a.) Find  $I_1$  for the circuit shown. (10pts)



$I_1$	
-------	--

Problem 2 (cont)

Name \_\_\_\_\_

Section Number (please circle one)

**1**

MTR  
10-12

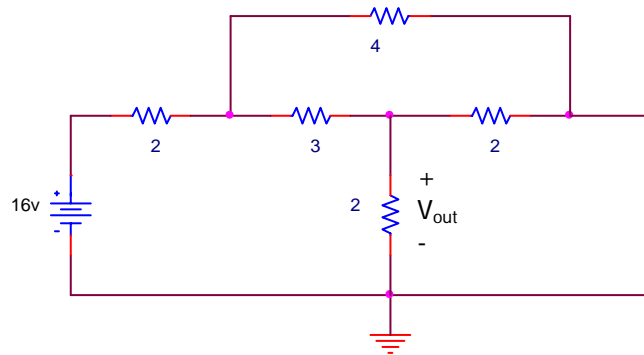
**2**

MWR  
4-6

**3**

MTR  
2-4

b.) Find  $V_{out}$  in the circuit shown. (10pts)



$V_{out}(t)$	
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Problem 3 (20pts)

Name \_\_\_\_\_

Section Number (please circle one)

**1**

**2**

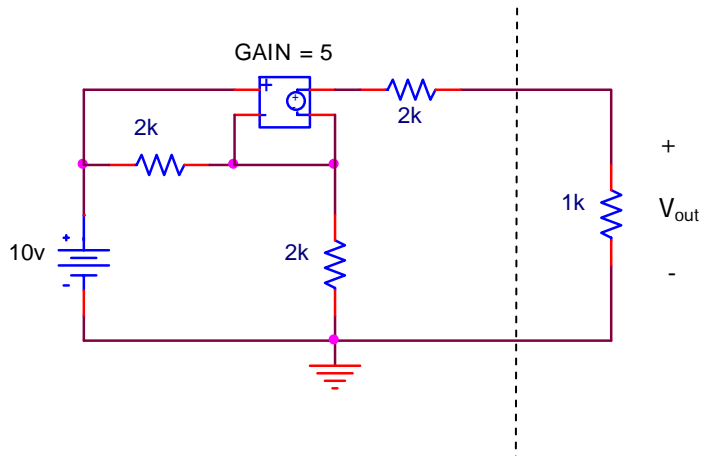
**3**

MTR  
10-12

MWR  
4-6

MTR  
2-4

Find the Thevenin equivalent (to the left of the dashed line) for the circuit shown below and then use it to find  $V_{out}$ .



$V_{th}$	
$R_{th}$	
$V_{out}$	

**Problem 4 (20pts)**

Name \_\_\_\_\_

Section Number (please circle one)

**1**

MTR  
10-12

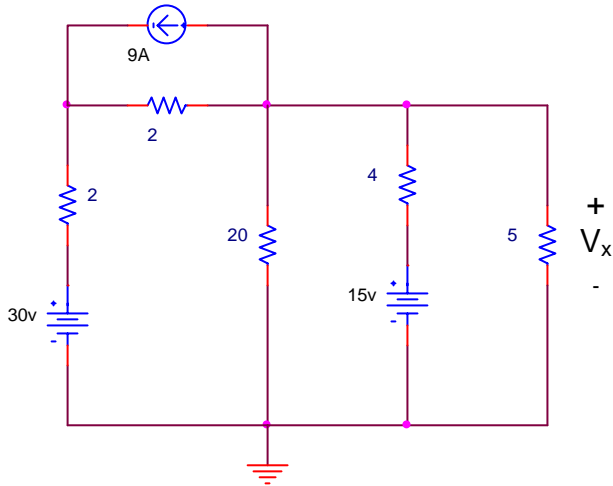
**2**

MWR  
4-6

**3**

MTR  
2-4

a.) Find the amount that each source contributes to  $V_x$  for the circuit shown below using superposition. (12pts)



$V_x$ (30v)	
$V_x$ (15v)	
$V_x$ (9A)	

Problem 4 (cont.)

Name \_\_\_\_\_

Section Number (please circle one)

**1**

**2**

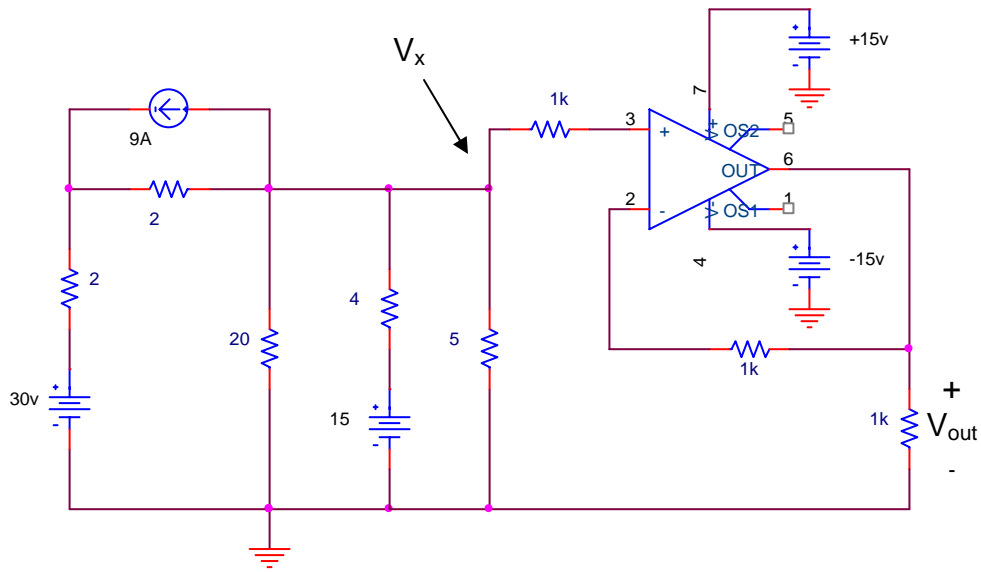
**3**

MTR  
10-12

MWR  
4-6

MTR  
2-4

b.) Find  $V_x$  and  $V_{out}$  for the circuit shown below. (8pts)



$V_x$	
$V_{out}$	

Problem 5 (20pts)

Name \_\_\_\_\_

Section Number (please circle one)

**1**

MTR  
10-12

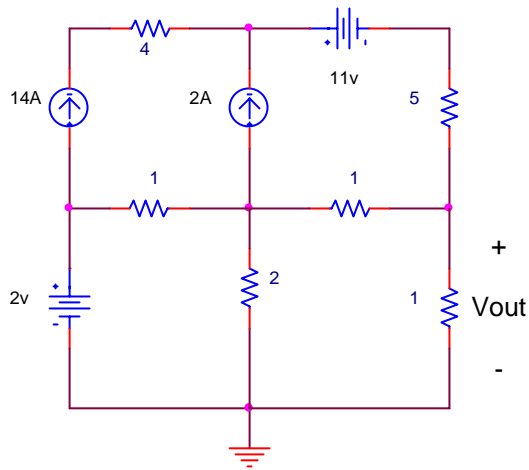
**2**

MWR  
4-6

**3**

MTR  
2-4

Find  $V_{out}$  for the circuit shown below using either mesh or nodal analysis.



$V_{out}$	
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Extra space (if needed)

Name \_\_\_\_\_

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MTR  
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4-6

**3**

MTR  
2-4

Extra space (if needed)

Name \_\_\_\_\_

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MTR  
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MTR  
2-4