ECE 320 - Quiz #1c - Name _____

EE 206 Review.
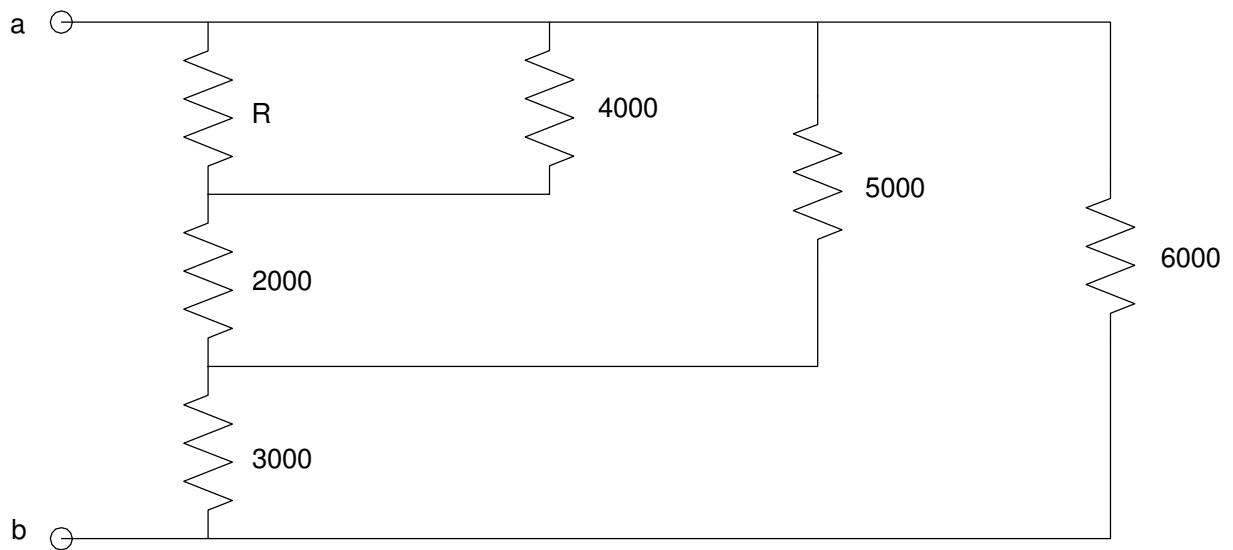
1) Let R be your birthday

$R = 1000 + (month)*100 + (day)$

For example, May 14th would give R = 1514 Ohms

Determine the resistance Rab

R 1000 + 100*month + day	Rab
1514	**2701.161**

1514 || 4000 = 1098.295

1098.295 + 2000 = 3098.295

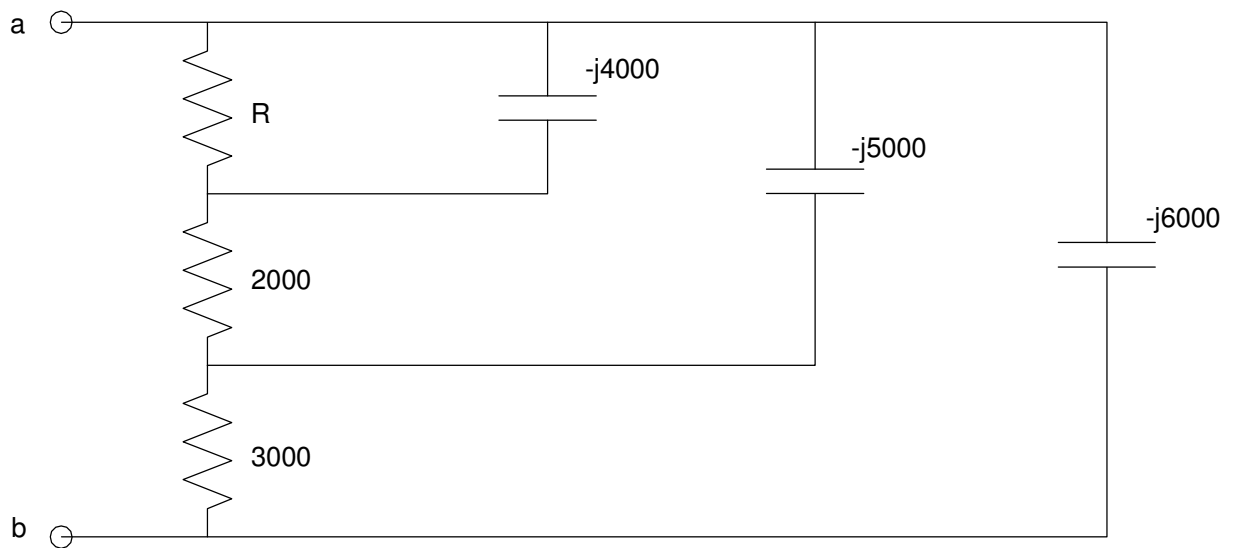3098.295 || 5000 = 1912.931

1912.931 + 3000 = 4912.931

4912.931 || 6000 = 2701.161

2) Let R be your birthday

$$R = 1000 + (month)*100 + (day)$$

For example, May 14th would give R = 1514 Ohms

Determine the resistace Rab (it will be a complex number)

R 1000 + 100*month + day	Rab
1514	**2148.79 - j2710.89**

a ○

-j4000

R

-j5000

2000

-j6000

3000

b ○

1514 ‖ -j4000 = 1324.28 - j501.24

1324.28 - j501.24 + 2000 = 3324.28 - j501.24

(3324.28 - j501.24) ‖ (-j5000) = 2011.57 - j1671.12

(2011.57 - j1671.12) + 3000 = 5011.57 - j1671.12

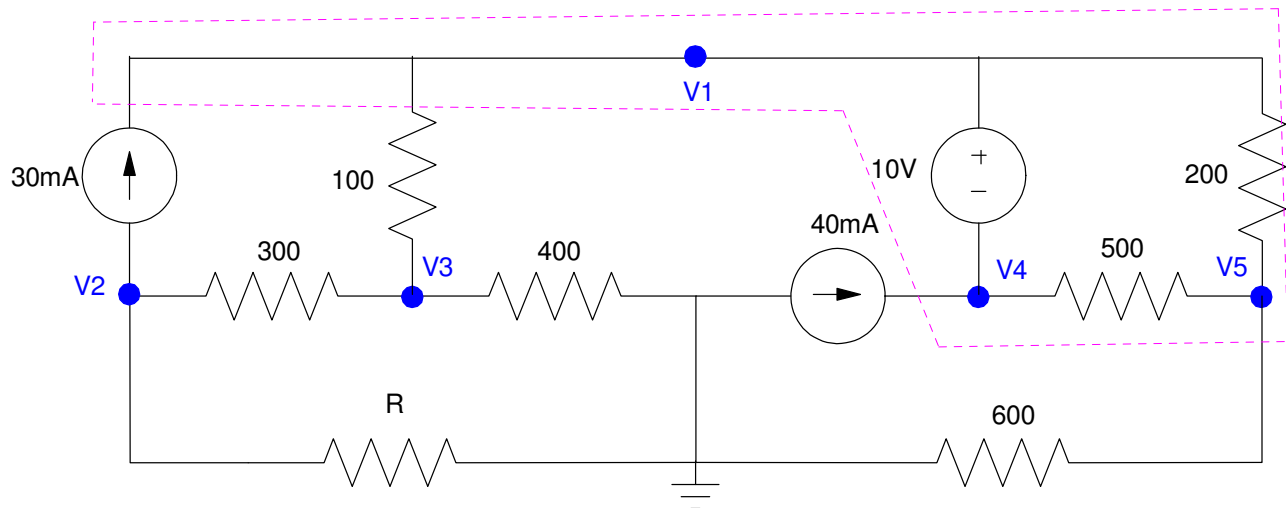(5011.57 - j1671.12) ‖ (-j6000) = 2148.79 - j2710.89

3) Voltage Nodes. Let R be your birthday

R = 1000 + (month)*100 + (day)

For example, May 14th would give R = 1514 Ohms

Give 5 equations to solve for the 5 unknown voltages. (you don't need to solve)

$$V_1 - V_4 = 0$$

$$30mA + \left(\frac{V_2 - V_3}{300}\right) + \left(\frac{V_2}{1514}\right) = 0$$

$$\left(\frac{V_3 - V_2}{300}\right) + \left(\frac{V_3 - V_1}{100}\right) + \left(\frac{V_3}{400}\right) = 0$$

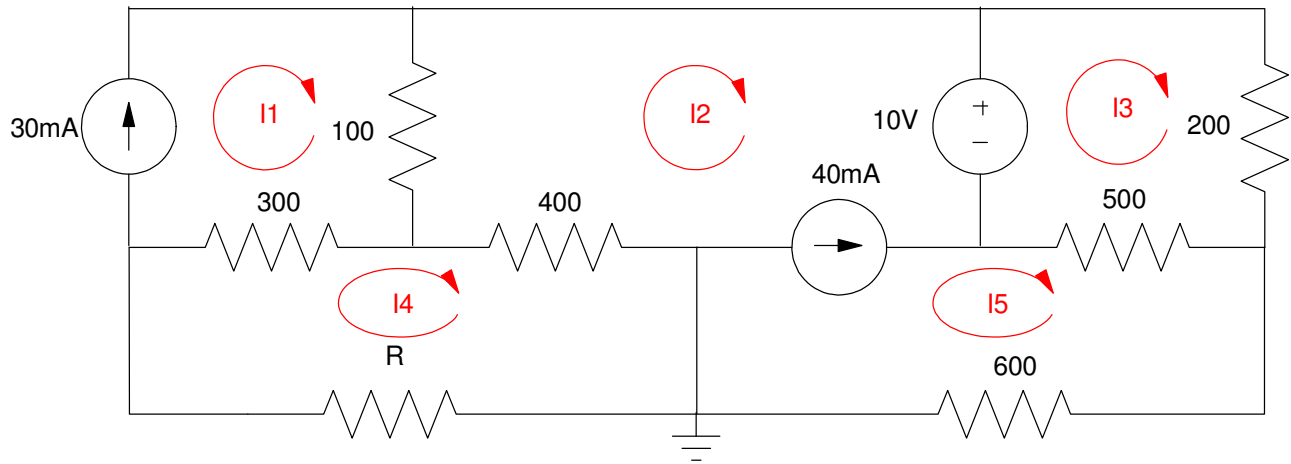$$\left(\frac{V_5 - V_4}{500}\right) + \left(\frac{V_5}{600}\right) + \left(\frac{V_5 - V_1}{200}\right) = 0$$

$$-30mA + \left(\frac{V_1 - V_3}{100}\right) - 40mA + \left(\frac{V_5}{600}\right) = 0$$

4) Current Loops. Let R be your birthday

$R = 1000 + (month)*100 + (day)$

For example, May 14th would give R = 1514 Ohms

Give 5 equations to solve for the 5 unknown currents
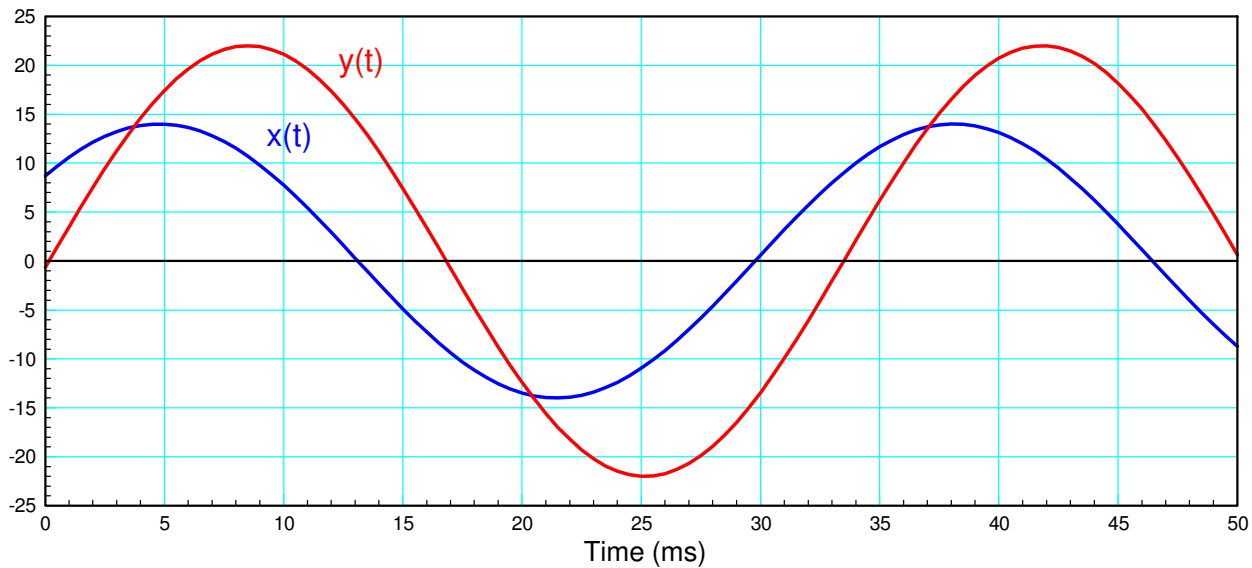

$I_1 = 30mA$

$I_5 - I_2 = 40mA$

$-10 + 200I_3 + 500(I_3 - I_5) = 0$

$300(I_4 - I_1) + 400(I_4 - I_2) + 1514I_4 = 0$

$100(I_2 - I_1) + 200I_3 + 600I_5 + 400(I_2 - I_4) = 0$

5) Signals X and Y are displayed on an oscilloscope. Give the phasor representation for these two voltages

Frequency (Hz)	X		Y	
	Amplitude	Phase	Amplitude	Phase

6) Let R be your birthday

  R = 1000 + (month)*100 + (day)

For example, May 14th would give R = 1514 Ohms

Determine V2(t) assuming

$$V_1(t) = 14 + 13\cos(800t) + 12\sin(800t)$$

R =	
V2(t) =	