Circuit & Electronic
Group9

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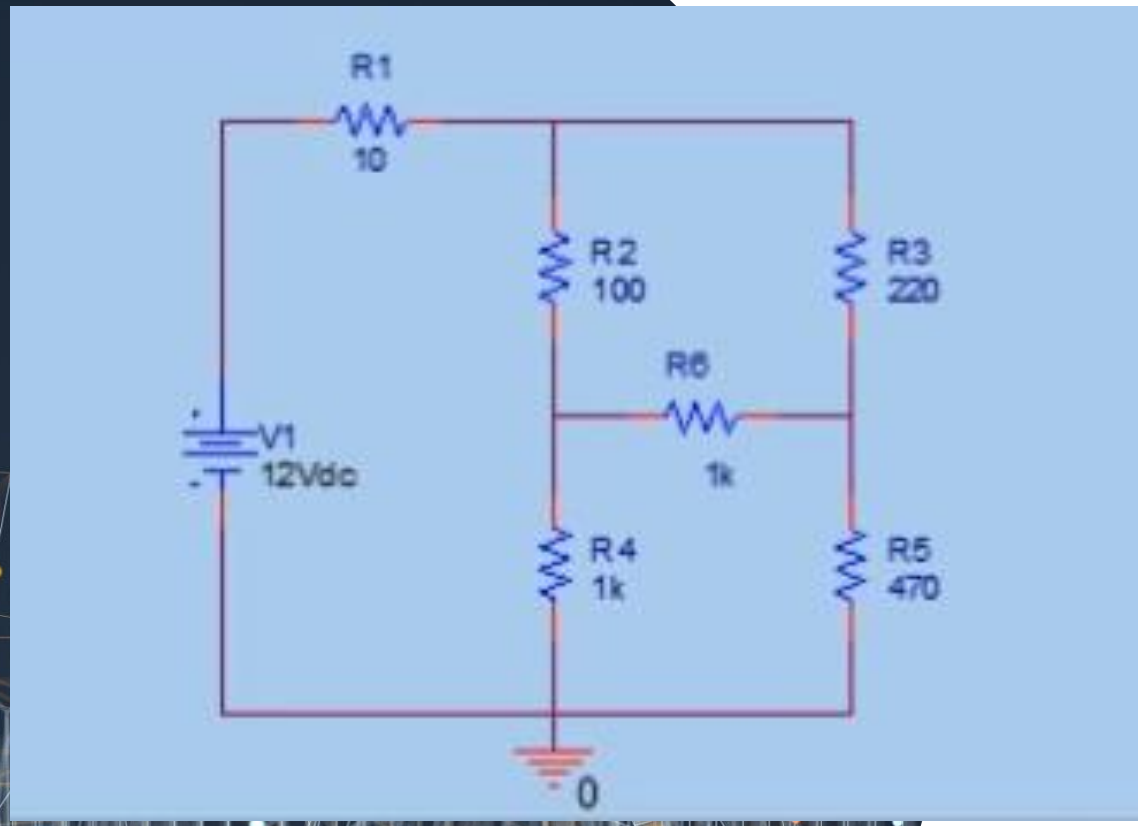
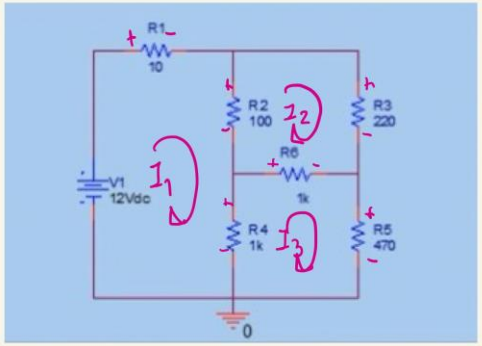


PR6



ΣI_1: $V_{R_1} + V_{R_2} + V_{R_3} = 12$.

$(R_1 + R_2 + R_3) I_1 + (-R_2) I_2 + (-R_4) I_3 = 12$

ΣI_2: $V_{R_3} - V_{R_6} - V_{R_2} = 0$.

$(-R_2) I_1 + (R_2 + R_3 + R_6) I_2 + (-R_6) I_3 = 0$.

ΣI_3 $V_{R_6} + V_{R_5} - V_{R_4} = 0$.

$(-R_4) I_1 + (-R_6) I_2 + (R_4 + R_6 + R_5) I_3 = 0$.

$I_1 = (1110) I_1 + (-100) I_2 + (-1000) I_3$

$I_2 = (-100) I_1 + (1320) I_2 + (-1000) I_3$

$I_3 = (-1000) I_1 + (-1000) I_2 + (2470) I_3$

$$\begin{bmatrix} 1110 & -100 & -1000 \\ -100 & 1320 & -1000 \\ -1000 & -1000 & 2470 \end{bmatrix} \begin{bmatrix} 12 \\ 0 \\ 0 \end{bmatrix} = \begin{bmatrix} I_1 \\ I_2 \\ I_3 \end{bmatrix}$$

$\det A = 964344000$

$I_2 = \dfrac{14964000}{964344000} = 0.015.51A$

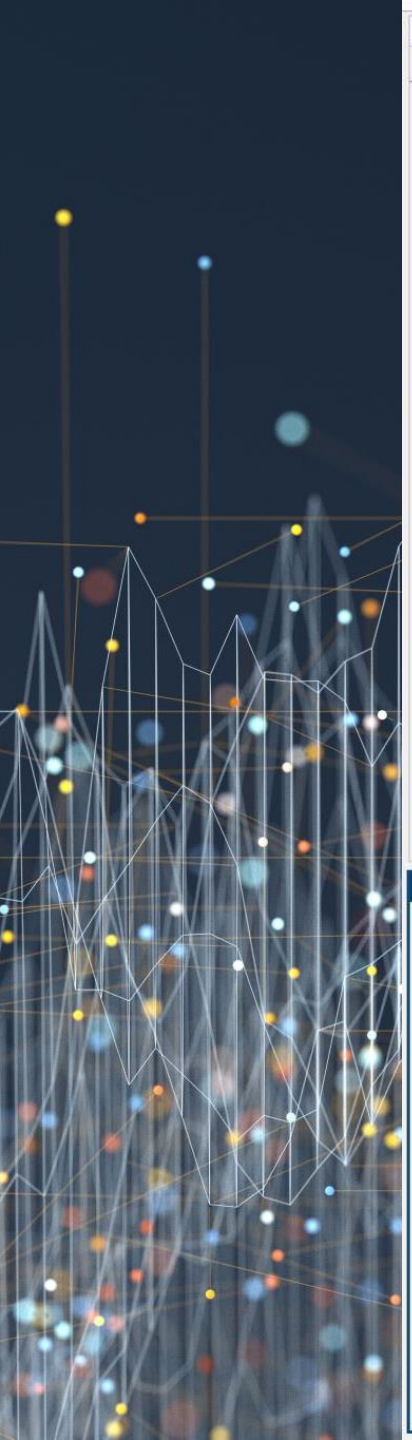
$I_3 = \dfrac{17,040,000}{964,344,000} = 0.01767A$

$P = IV$

$= I^2 R$

$= (I_3 - I_2)^2 (1000)$

$= 4.6657 mA$



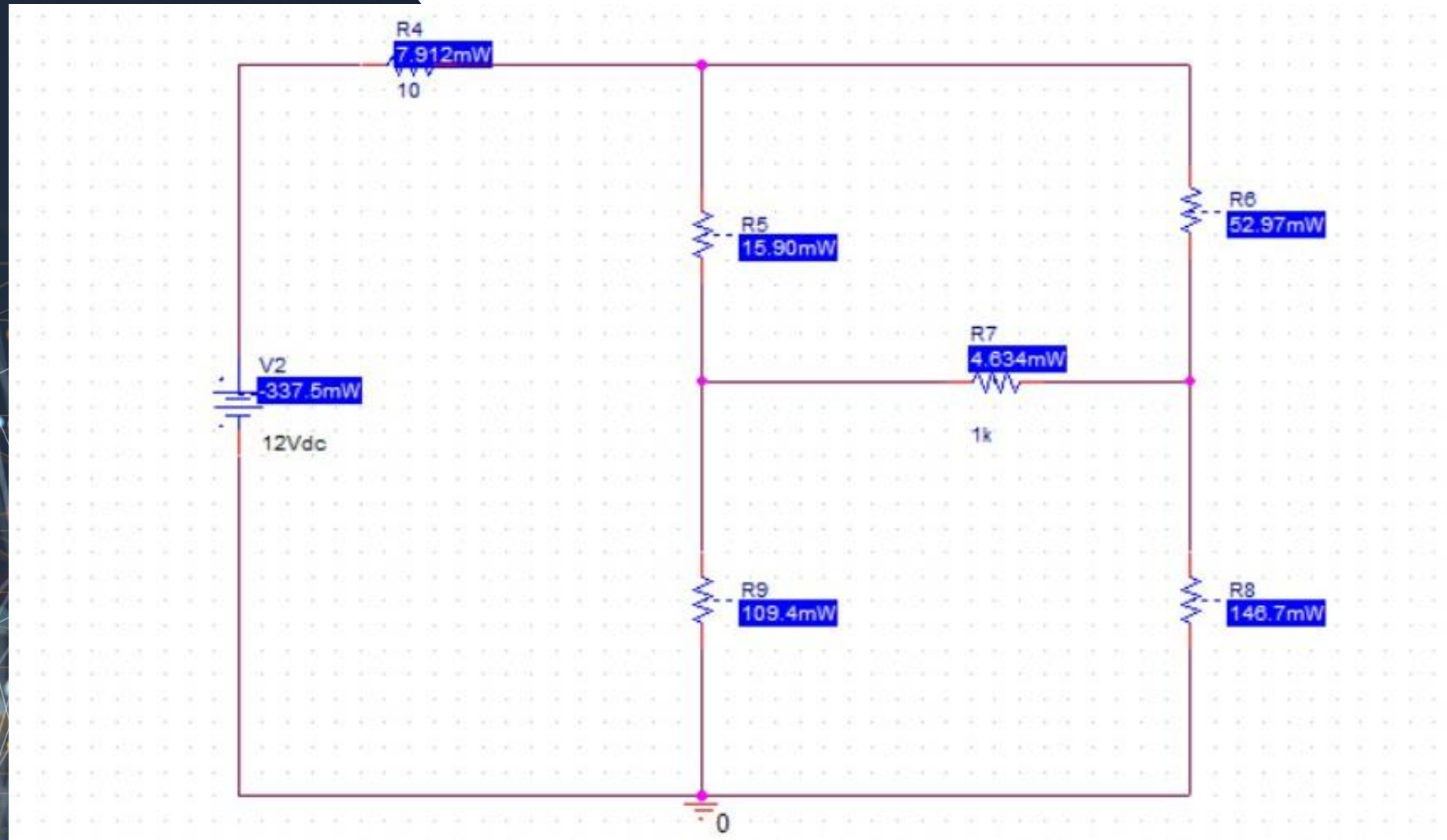
Editor - C:\Users\billy\Documents\MATLAB\Untitled3.m

Untitled.m | Untitled2.m | lab.m | Untitled3.m

```
1  V = input("V : ");
2  R1 = input("R1 : ");
3  R2 = input("R2 : ");
4  R3 = input("R3 : ");
5  R4 = input("R4 : ");
6  R5 = input("R5 : ");
7  R6 = input("R6 : ");
8
9  MatD = [R1+R2+R4, -R2, -R4;
10         -R2, R2+R3+R6, -R6;
11         -R4, -R6, R4+R5+R6];
12 MatI1 = [V, -R2, -R4;
13         0, R2+R3+R6, -R6;
14         0, -R6, R4+R5+R6];
15 MatI2 = [R1+R2+R4, V, -R4;
16         -R2, 0, -R6;
17         -R4, 0, R4+R5+R6];
18 MatI3 = [R1+R2+R4, -R2, V;
19         -R2, R2+R3+R6, 0;
20         -R4, -R6, 0];
21
22 I1 = det(MatI1)/det(MatD);
23 I2 = det(MatI2)/det(MatD);
24 I3 = det(MatI3)/det(MatD);
25
26 PR6 = ((I3-I2)*(I3-I2))*R6
```

Command Window

```
PR6 =

    0.0046

>> Untitled3
V : 12
R1 : 10
R2 : 100
R3 : 220
R4 : 1000
R5 : 470
R6 : 1000

PR6 =

    0.0046

>>
```


R4
7.912mW
10
R5
15.90mW
R6
52.97mW
R7
4.634mW
1k
V2
337.5mW
12Vdc
R9
109.4mW
R8
146.7mW
0