

Namų darbas Nr. 1

1. variantas

2014-04-13

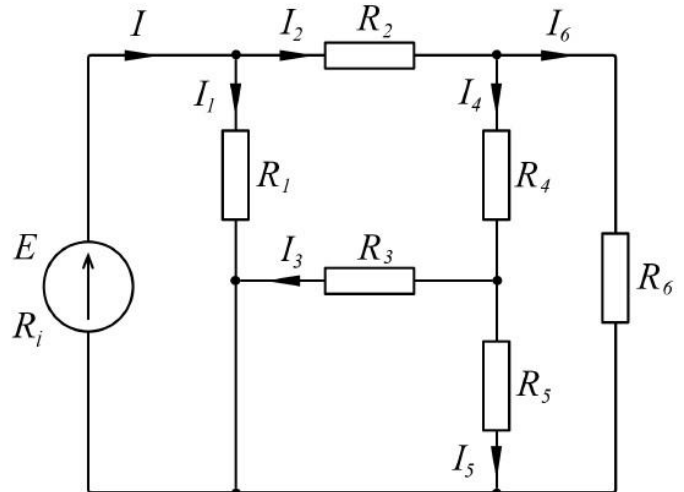
Vardas: Aivaras Pavardė: Avgustinas Grupė: MT13N

Duota: $P_1 = 183,17W$
 $R_i = 1\Omega$
 $I_3 = 1,58A$

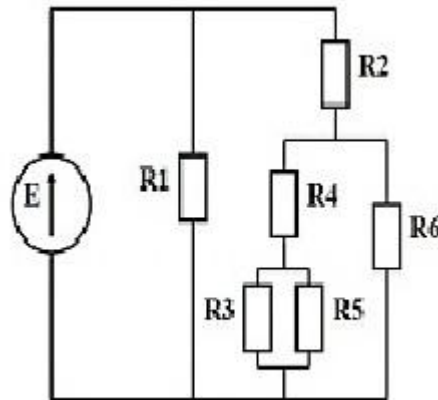
$R_1 = 8\Omega$
 $R_2 = 5\Omega$
 $R_3 = 2\Omega$
 $R_4 = 4\Omega$
 $R_5 = 3\Omega$

Rasti: R_6 ir E .

Sprendimas:



Kad būtų man aiškiau schemą persidariau šitaip:



1. $P=UI$;
 $P_1=U_1^2/R_1=183,17W$
 $U_1^2/8\Omega=183,17W$
 $U_1=38.28V$
2. $I_1=U_1/R_1=38.28V/8\Omega\approx 4.79A$
3. $R_{35}=R_3 \cdot R_5 / (R_3 + R_5)$
 $R_{35}=2 \cdot 3 / (2+3)=1.2\Omega$
4. $R_{435}=R_4 + R_{35}$
 $R_{435}=4 + 1.2=5.2\Omega$
5. $R_{6435}=R_6 \cdot R_{435} / (R_6 + R_{435})$
 $R_{6435}=R_6 \cdot 5.2\Omega / (R_6 + 5.2\Omega)$
6. $R_{26435}=R_2 + R_{6435}$
 $R_{26435}=5\Omega + R_{6435}$
7. $U_6=U_1 \cdot R_{6435} / (R_2 + R_{6435})$
8. $U_{35}=U_6 \cdot R_{35} / (R_4 + R_{35})$

$$U_{35}=U_6*1.2/(4+1.2)$$

$$U_{35}=U_6*0.23$$

$$9. I_3=U_{35}/R_3$$

$$I_3=U_6*0.23/2=U_6*0.115=1.58A$$

$$10. U_6=1.58A/0.115\approx 13.74V$$

$$11. U_6=U_1*R_{6435}/(R_2+R_{6435})$$

$$13.74V=38.28V* R_{6435}/(5\Omega+R_{6435})$$

$$0.36= R_{6435}/(5\Omega+R_{6435}) |*(5\Omega+R_{6435})$$

$$1.8+0.36R_{6435}= R_{6435}$$

$$1.8= R_{6435}-0.36R_{6435}$$

$$1.8/0.64= R_{6435}$$

$$R_{6435}=2.81\Omega$$

$$12. R_{6435}=R_6*R_{435}/R_6+R_{435}$$

$$2.81\Omega=R_6*5.2\Omega/R_6+5.2\Omega$$

$$2.81\Omega/5.2\Omega=R_6/R_6+5.2\Omega$$

$$0.54= R_6/R_6+5.2\Omega |*(R_6+5.2\Omega)$$

$$0.54R_6+2.8\Omega=R_6$$

$$R_6-0.54R_6=2.8\Omega$$

$$0.46R_6=2.8\Omega$$

$$R_6\approx 6$$

$$13. R_{26435}=R_2+R_{6435}$$

$$R_{26435}=5\Omega+2.81\Omega$$

$$R_{26435}=7.81\Omega$$

$$14. I_2=U_1/ R_{26435}$$

$$I_2=38.28V/7.81\Omega$$

$$I_2=4.9A$$

$$15. I= I_2+I_1$$

$$I=4.9A+4.79A$$

$$16. I=9.69A$$

$$17. E=U_1+IR_i$$

$$E=38.28V+9.69A*1\Omega$$

$$E=47.97V$$

ATSAKYMAS: $E=47.97V$, $R_6\approx 6\Omega$