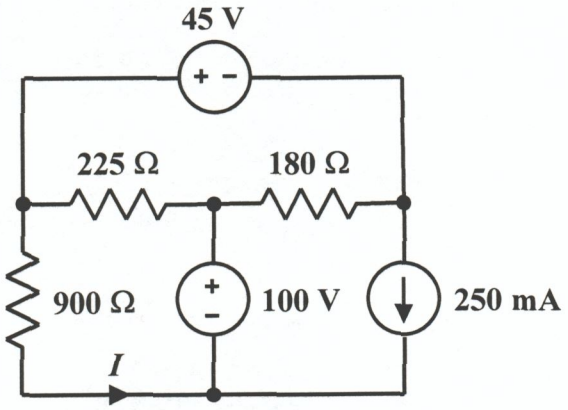
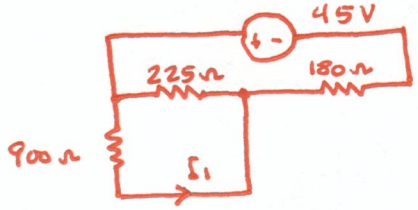
EE 2240

Problem #04

Use the superposition method to find I, and then calculate the power dissipated in the 900Ω resistor.



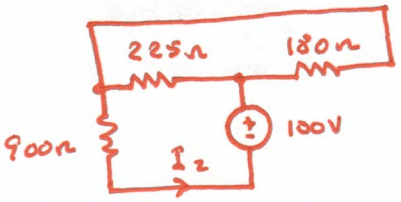
For the 45V source:



$225\Omega \| 900\Omega = 180\Omega$

$I_1 = \frac{\frac{1}{2}(45V)}{900\Omega} = 25\,mA$

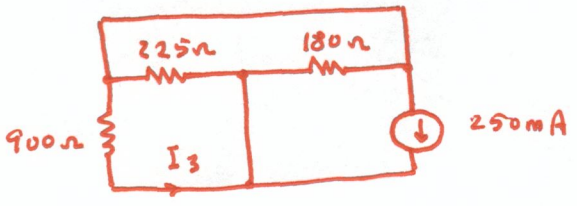
For the 100V source:



$225\Omega \| 180\Omega = 100\Omega$

$I_2 = \frac{\frac{9}{10}(100V)}{900\Omega} = 100\,mA$

For the 250mA source:



$I_3 = -\frac{\frac{1}{900}}{\frac{1}{900}+\frac{1}{225}+\frac{1}{180}}(250\,mA)$

$= -25\,mA$

$I = I_1 + I_2 + I_3 = 25 + 100 - 25 = 100\,mA$

$P_{900\Omega} = I^2(900\Omega) = 9\,W$