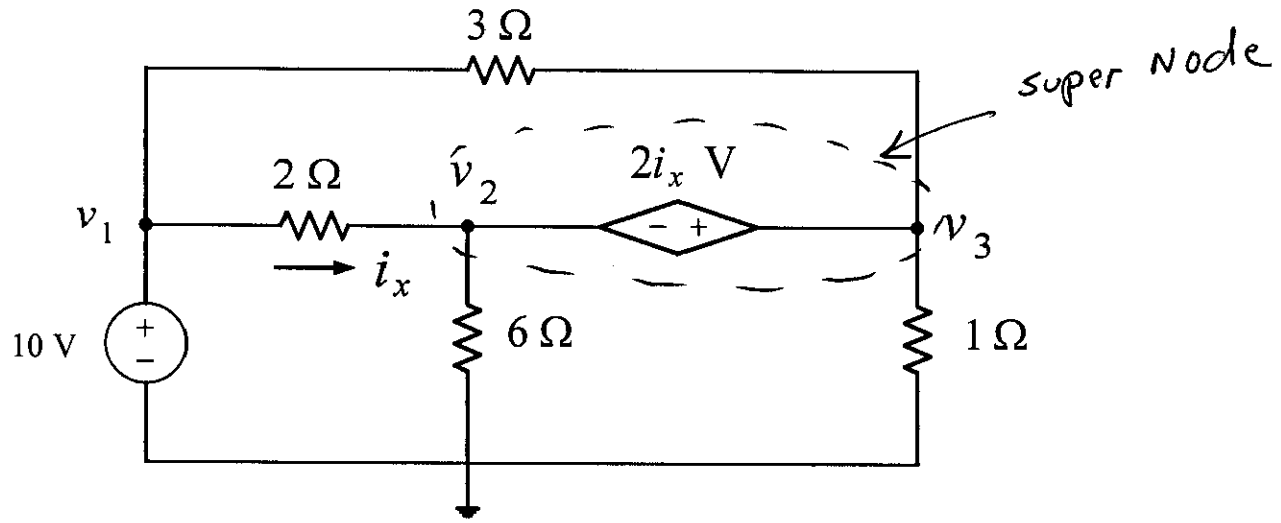
EE 201-01 – Fall 2011(111)
Quiz 2

SER	ID	NAME KEY



For the circuit shown above use the Node voltage method to find the followings:

(a) v_1, v_2, v_3 ?

(b) Power absorb by the 6Ω resistor ?

(a) $U_1 = 10$ V by inspection

KCL on SN $\quad \frac{V_2 - 10}{2} + \frac{U_2}{6} + \frac{U_3}{1} + \frac{U_3 - 10}{3} = 0$

$\Rightarrow \quad 2U_2 + 4U_3 = 25 \quad -$ (1)

$U_3 - U_2 = 2i_x = 2\left(\frac{10 - U_2}{2}\right) = 10 - U_2$

$\Rightarrow \quad U_3 = 10$

from (1) $\Rightarrow \quad U_2 = \frac{25 - 4(10)}{2} = -7.5$ V

$\Rightarrow$ $\boxed{U_1 = 10 \quad U_2 = -7.5 \quad U_3 = 10}$

(b) $P_{6\Omega} = \frac{U_2^2}{6} = \frac{(-7.5)^2}{6} = \boxed{9.375\ W}$