ECE 1270

Su 08

**HOMEWORK #8 answers**

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1.  $\dfrac{v_1}{R_1} + \dfrac{v_1 + v_s}{R_2} - \alpha(-v_s - v_3) = 0$ A

    $\alpha(-v_s - v_3) + \dfrac{v_2 - v_3}{R_3} + i_s = 0$ A

    $\dfrac{v_3 + v_s}{R_4} + \dfrac{v_3 - v_2}{R_3} - i_s = 0$ A

2.  Answers vary

3.  $i_1 = i_s$

    $v_s - i_2 R_1 + i_1 R_1 - i_2 R_2 + i_3 R_2 = 0$ V

    $-i_3 R_2 + i_2 R_2 - \alpha(i_2 - i_3) - i_3 R_3 = 0$ V

4.  $v_{\text{Th}} = \dfrac{v_s}{1 + \dfrac{R_1}{R_2} - \alpha R_1}$ , $R_{\text{Th}} = R_1 \parallel R_2 \parallel -\dfrac{1}{\alpha}$

5.  $p = 6.4$ mW