EGR 260
Circuit Analysis
File: N260H3

Due date: _____
(See Due Dates Table)

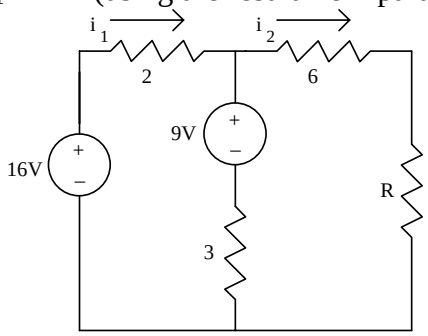
Homework Assignment #3

Reading Assignment:

Chapter 4, Sections 1 - 8, from **Electric Circuits, 8th Ed.**, by Nilsson

Problem Assignment:

1) Nodal analysis problems: 9, 11a, 15, 24a, 25, 27
2) Mesh analysis problems: 31a, 41a, 43, 47, 50
3) Analyze problem 4.15 again using mesh equations instead of node equations.
4) Analyze Circuit 1 below using mesh equations.
   a) Find i_1 and i_2 as general functions of R.
   b) Sketch graphs of i_1 vs. R and i_2 vs. R (or use a computer-generated graph).
   c) Solve for i_1 and i_2 when R = 25 Ω (using the result from part A).
   d) Solve for R such that i_1 = 2 A (using the result from part A).



Circuit 1

Selected Answers:

4-11a) i_1 = 23.76 A, i_2 = 5.33 A, i_3 = 18.43 A, i_4 = 15 A, i_5 = 9.77 A, i_6 = 8.66 A
4-15) ΣPdiss = 306 W
4-24a) i_1 = 1 mA, i_2 = -20 mA, i_3 = 31 mA
4-25) v_o = 20 V
4-43) ΣPdel = 5157 W
5) a) $i_1 = \dfrac{90 + 7R}{36 + 5R}$