EE100 HOMEWORK SET 4 Fall 2004

Issued: September 20, 2004 Due: September 27, 2004

1. Do Peoblem3.3.

2. Do Problem 3.4.

3. Do Problem 3.6.

4. Do Problem 3.8.

5. Do Problem 3.16.

6. Do Problem 3.20.

3.3 Using node voltage analysis in the circuit of Figure P3.3, find the currents i_1 and i_2. $R_1 = 3\ \Omega$; $R_2 = 1\ \Omega$; $R_3 = 6\ \Omega$.

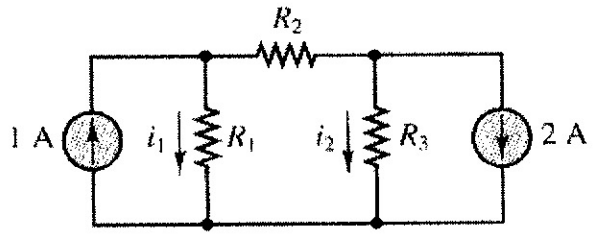

Figure P3.3

3.4 Use the mesh analysis to determine the currents i_1 and i_2 in the circuit of Figure P3.3.

3.6 Using node voltage analysis in the circuit of Figure P3.6, find the three indicated node voltages. Let $I = 0.2$ A; $R_1 = 200\ \Omega$; $R_2 = 75\ \Omega$; $R_3 = 25\ \Omega$; $R_4 = 50\ \Omega$; $R_5 = 100\ \Omega$; $V = 10$ V.

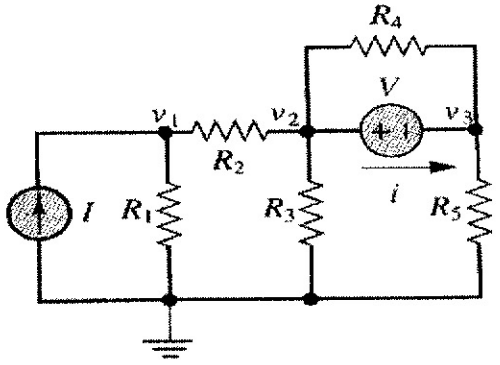

Figure P3.6

3.8 The circuit shown in Figure P3.8 is a Wheatstone bridge circuit. Use node voltage analysis to determine V_a and V_b, and thus determine $V_a - V_b$.

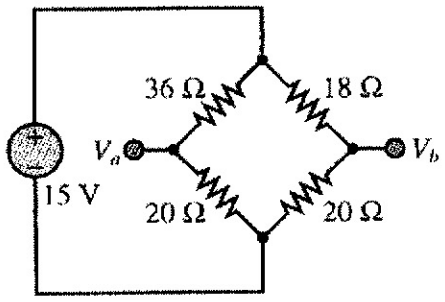

Figure P3.8

3.16 Use mesh current analysis to find the current i in the circuit of Figure P3.16. Let $V = 5.6$ V; $R_1 = 50\ \Omega$; $R_2 = 1.2\ \text{k}\Omega$; $R_3 = 330\ \Omega$; $g_m = 0.2$ S; $R_4 = 440\ \Omega$.

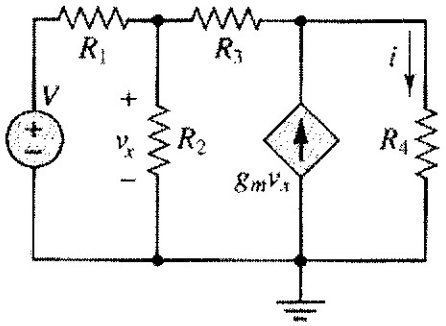

Figure P3.16

3.20 Using mesh current analysis, find the voltage gain $A_v = v_2/v_1$ in the circuit of Figure P3.20.

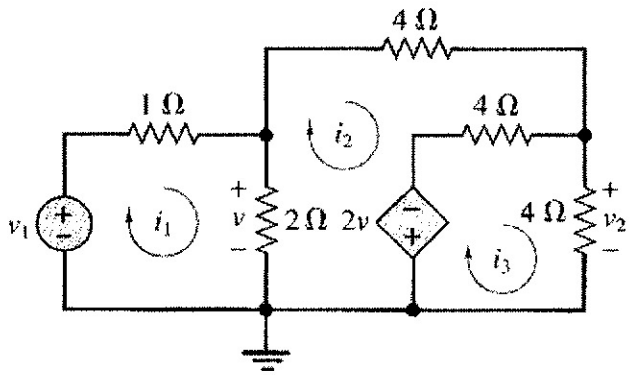

Figure P3.20