CASE WESTERN RESERVE UNIVERSITY
Case School of Engineering
Department of Electrical Engineering and Computer Science

ENGR 210. Introduction to Circuits and Instruments (4)

Homework Set No. 4 Issued 2/4/04
References: [T&R4] sections 3-1, 3-2, 3-3 Due 2/11/04

NODE VOLTAGE ANALYSIS

1) (5 pts) Problem 3-2, p. 129.

2) (5 pts) Problem 3-4, p. 129.

3) (5 pts) Problem 3-8, p. 130.

This circuit is called a Wheatstone Bridge and is often used for making precise measurements of small changes in resistance.

For information about early Wheatstone bridges check out:
http://physics.kenyon.edu/EarlyApparatus/Electrical_Measurements/Wheatstone_Bridge/Wheatstone_Bridge.html
For a mathematical analysis of the Wheatstone Bridge see:
http://www.efunda.com/designstandards/sensors/methods/wheatstone_bridge.cfm

4) (5 pts) Problem 3-19, p. 132.

MESH CURRENT ANALYSIS

5) (5 pts) Problem 3-10, p. 130.

6) (5 pts) Problem 3-12, p. 131.

HINT: Don't forget to consider using source transformations and supernodes/supermeshes if nothing else works.

NOTE: Please put section code AND your CWRU e-mail next to name at top of page. Section codes are

MA (Monday Afternoon)
ME (Monday Evening)
TA (Tuesday Afternoon)
TE (Tuesday Evening)
WA (Wednesday Afternoon)
WE (Wednesday Evening)