

Exercise 9 (Individual, 15 Points Total)
DATE: Thursday, April 23, 5:30pm

Leigh Tesfatsion
EE/Econ 458, Spring 2009

Exercise 9
Electric Power Trading Subject to
Transmission Constraints: Three-Bus Case
(K/S Chapter 6)

Basic Reference for Ex 9: EE/Econ 458 Syllabus Section IV.A

- [1] ** D. Kirschen/G. Strbac, *Power System Economics*, Chapter 6 (Sections 6.1-6.3.4)
- [2] ** Lecture Notes on K/S Sections 6.1-6.3.4, Syllabus Section IV.B.1 ON-LINE

General Exercise Instructions:

- (a) This exercise consists of FOUR QUESTIONS.
- (b) Be sure to show all your work so that partial credit can be given for answers even if some type of error occurs along the way.
- (c) Read each question carefully before you begin your answer.
- (d) Define terms and concepts clearly and carefully.
- (e) It is recommended that you make an extra copy of your answer for use in class discussion on the due date. Individuals will be called upon to report their findings.
- (f) **Recall that late assignments cannot be accepted – no exceptions! Make sure your exercise is turned in to the instructor or TA by the *beginning* of class on the due date before discussion of exercise answers commences. Do not send your exercise via email or place it in the department mailbox of the instructor or TA unless you have made prior explicit agreed-to arrangements with the instructor or TA to do so. In all cases exercises must be received in advance of the due-date discussion of exercise answers in order to be counted.**

QUESTION 1 (4 Points)

Carry out **Problem 6.5** on pages 202-203 of Chapter 6 for the Kirschen/Strbac (K/S) textbook, as follows.

An **answer** for Problem 6.5 is provided in the K/S Appendix (p. 271). **Your** task is to carefully *derive* this answer to establish its correctness (or to carefully show why you believe a provided answer is not correct if that is what you conclude).

QUESTION 2 (3 Points)

Carry out **Problem 6.6** on page 203 of Chapter 6 for the Kirschen/Strbac (K/S) textbook, as follows.

An **answer** for Problem 6.6 is provided in the K/S Appendix (p. 271). **Your** task is to carefully *derive* this answer to establish its correctness (or to carefully show why you believe a provided answer is not correct if that is what you conclude).

QUESTION 3 (6 Point)

Carry out **Problem 6.7** on page 203 of Chapter 6 for the Kirschen/Strbac (K/S) textbook, as follows.

An **answer** for Problem 6.7 is provided in the K/S Appendix (p. 271). **Your** task is to carefully *derive* this answer to establish its correctness (or to carefully show why you believe a provided answer is not correct if that is what you conclude).

QUESTION 4 (2 Point)

Carry out **Problem 6.8** on page 203 of Chapter 6 for the Kirschen/Strbac (K/S) textbook, as follows.

An **answer** for Problem 6.8 is provided in the K/S Appendix (p. 271). **Your** task is to carefully *derive* this answer to establish its correctness (or to carefully show why you believe a provided answer is not correct if that is what you conclude).