Problem Set 7

Math 20

Due March 22, 2006

Reading

Read Sections 2.4–2.6 and 3.1–3.2 in Kolman and Hill.

- For Section 2.4, think about the relationship between electrical circuits and traffic networks

- For Section 2.5, think about how many processes can be described by a Markov chain, and take note of the properties of a transition matrix that are necessary for a steady-state vector to exist.

- Section 2.6 we did not cover in class, but it is important in macroeconomics. Please read it carefully. In the end, it's another transition-type matrix, and our quarry is again something like a steady-state vector.

- Section 3.1 is about the "real" definition and properties of determinants. Don't worry about the definition in terms of permutations and their signs; we might as well take the definition to be given by cofactor expansion. But do take note of the properties

- Section 3.2 is about finding determinants by cofactor expansion. Practice this.

Book Problems

- Section 2.5: 2, 4, 12, 14

- Section 2.6: 2, 6, 12

- Section 3.1: T.3, T.6, T.10, T.16

- Section 3.2: 4, 16, 18

Additional Problem

Call this problem C1: Consider the network of traffic shown below (an English roundabout):
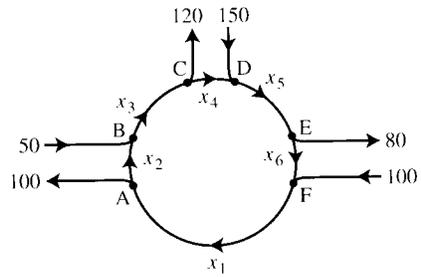
Find the minimum value of x_6.

Division

- Part I: Section 2.5, 2.6, and C1

- Part II: Sections 3.1 and 3.2