COLBY COLLEGE
Department of Mathematics
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MA332 **Allen B. Downey**
Fall 1998

Assignment 5: IVPs and Matrices

Reading: Faires and Burden Chapter 6.1 – 6.4

Due: Thursday 15 October

The purpose of this assignment is to check out systems of IVP and start on linear system matrices.

System of IVP

1. Work on Exercise 5 on page 229 of Faires and Burden, using any of the techniques we have studied for solving IVPs (or one of the ones we didn't study, if you want).

Linear systems

1. Read the Maple documentation pertaining to matrices, and peruse the sections in the book that demonstrate matrix manipulation in Maple. Write a short answer to the following question: "What is the difference in Maple between an array and a matrix?"
2. Solve the system in Exercise 5d on page 255, using 5-digit rounding arithmetic. Use `gausselim` and `backsub` as demonstrated in the book.
3. Solve the same system again using partial pivoting, and compare the accuracy of the results.
4. Solve the same system one more time using scaled partial pivoting, and compare the accuracy of the results. Hint: you might have to set one of the matrix entries to zero as on page 254.
5. Based on this experiment, what pivoting technique do you think `gausselim` is using?