DISCUSSION FOR FIFTH TUTORIAL

DATE: MONDAY NOV 22 (LBT01), FRIDAY NOV 26 (LCT01), MONDAY NOV 29 (LBT02 & LBT03), FRIDAY DEC 3 (LCT02)

From Thinking Mathematically, Second edition, p. 210.

The sequence defined by $u_{n+2} = u_{n+1} - u_n$ repeats itself after six iterations, (almost) no matter what the two starting numbers are. So does $u_{n+2} = u_{n+1}/u_n$. Experiment with other iterations such as $u_{n+2} = (1 + u_{n+1})/u_n$ to get other cycle lengths. Try imposing the parameter t so that $u_{n+2} = tu_{n+1} - u_n$ to have specified cycle length (choose a value of t that makes the sequence have a given length). Pick a non-zero number p and two starting numbers and look at the $u_{n+2} = p(u_{n+1} + p)/u_n$.

Think about how to use a computer to help you experiment (maybe a spreadsheet or a computer language).