Numerical Algorithms – Complexity W4241
PP6

- Let $\delta_{i+1} = 5\delta_i - 6\delta_{i-1} + 2$:
  - A. What is the general solution of the homogeneous equation?
  - B. Give a particular solution of the inhomogeneous equation.
  - C. What is the general solution of the inhomogeneous equation?
  - D. Let $\delta_0 = 1, \delta_1 = 2$. What is the solution with these starting conditions?
  - E. Compute δ_3 from $\delta_{i+1} = 5\delta_i - 6\delta_{i-1} + 2$, $\delta_0 = 1, \delta_1 = 2$, and also from your answer to Part D.

C9 (20 points)

- Write a program which will approximate all the roots of a n^{th} degree polynomial. Use Bernoulli's method to compute the zeros one at a time plus deflation to get them all. Test on *at least* three examples; polynomials of degree 2,3, and 4.

XC2

- Let $|\alpha_1| = |\alpha_2|$. What is $\lim_{k\to\infty} \frac{u_k}{u_{k-1}}$?