2 Bairstow's Method – due Monday, February 14

Write a program to do Bairstow's method. The program should take as input and integer n and a vector a of dimension $n+1$ representing a polynomial of degree n. It should also take as input a tolerance tol, a maximum number of iterations it and an initial guess u, v for a quadratic factor $x^2 - ux - v$. The program should return c, d where $x^2 - cx - d$ is your final estimate for a quadratic factor. The program should terminate when either $\|(u_i - u_{i-1}, v_i - v_{i-1})\| < tol$ or $i \geq it$. Find real quadratic factors of $x^4 + x^2 + 1$ and $x^3 + x^2 - 2$.