Numerical approximation of (S1) – (S6)

function equilibrium(N)

% This algorithm looks to calculate the equilibrium of an

% n-Firm judo competition

% Initialisation (S1)

P = [1];   % polynomial

ps(N) = 1; % price choice

qs(N) = 1; % P(ps)

% (S2)--(S3)

for i = N-1:-1:1

    P   = [-P./(ps(i+1)*qs(i+1)), 1];   % polynomial

    ps(i) = min(roots(P.*(length(P):-1:1)));   % price choice

    qs(i) = polyval(P, ps(i));   % P(ps)

end

% (S4)--(S6)

ks = zeros(1, N);

for i = 1:N

    ks(i) = qs(i)*(1 - sum(ks));

    disp(['Player ', num2str(i), ...

        ': p = ', num2str(ps(i)),...

        ', k = ', num2str(ks(i))]);

end