(* Notes by T. Curtright, February 2010. *)
upper = 300 (* Choose a cutoff for series approximations. *)
s = 3/2 (* Select a particular case of the Ricker map. *)
p[1] = 1 (* Initialize the string of coefficients. *)
p[2] = 1

Do[p[n] = (n - 1)! \sum_{m=1}^{n-1} \frac{m^{n-m} s^{n-1} p[m]}{(n-1)! (n-m)! \left\{ \prod_{j=m}^{n-2} (1-s^j) \right\}}, \{n, 3, upper\}]

(* Compute the coefficients up to and including the cutoff. *)
radius = Abs[N[(upper - 1) p[upper - 1] (1 - s^{upper - 1}) / p[upper]]]
(* Estimate radius of convergence for series. *)

Do[x[n] = \sum_{n=1}^{upper} \frac{1}{(n-1)!} x^n p[n] \left\{ \prod_{k=1}^{n-1} \frac{1}{(1-s^k)} \right\};

(* Compose the Schroeder auxiliary as a formal series. *)

(* Compute its derivative, again as a formal series. *)
Plot[\{x[n], \prime x[n]\}, \{x, -0.98 radius, 0.98 radius\}]
(* Plot the Schroeder function and its derivative. *)
In[10] := \[V[x_] = (Log[s] \[Psi][x] / \[Psi]prime[x]);
(* Compute the velocity as the ratio of the two series. *)
Plot[v[x], \{x, -0.96 radius, 0.96 radius\}] (* Plot the velocity. *)

Out[11] =

In[12] := \[V[x_] = -(Log[s] \[Psi][x] / \[Psi]prime[x])^2;
(* Compute the potential as the ratio of the two series. *)
Plot[V[x], \{x, -0.97 radius, 0.97 radius\}] (* Plot the potential. *)

Out[13] =