

9
d

7 ITERATIONS

START AT ANY $p_0 \in (0, 1)$

CONFIRM ORDER OF CONVERGENCE

$\{x_n\} \rightarrow \alpha$ w/ order r

$$|\alpha - x_n| \leq C |\alpha - x_{n-1}|^r$$

$$g(x) = 2x(1-x)$$

$$p_0 = x_0 = 0.9$$

$$g(x_0) = 2(0.9)(1-(0.9))$$

$$= 0.18 = x_1$$

$$g(x_1) = 2(0.18)(1-(0.18))$$

$$= 0.3 = x_2$$

$$g(x_2) = 2(0.3)(1-(0.3))$$

$$= 0.42 = x_4$$

$$g(x_4) = 2(0.42)(1-(0.42))$$

$$= 0.49$$

$$= x_5$$

$$g(x_5) = 0.5$$

$$= x_6$$

$$g(x_6) = 0.5$$

\vdots

DENOTE,

$$E_n = |\alpha - x_n|$$

$$E_n \leq C E_{n-1}^r$$

IF ...

$$\ln E_n \approx \ln(C E_{n-1}^r)$$

$$\ln E_n \approx \ln C + r \ln E_{n-1}$$

$$\text{ASSUME } C \approx 1 \rightarrow \ln C \approx 0$$

$$\ln E_n \approx r \ln E_{n-1}$$

$$r \approx \frac{\ln E_n}{\ln E_{n-1}}$$