HW 2

2 b — ORDER OF CONVERGENCE

$$x_{n+1} = \frac{2}{3}x_n + \frac{1}{x_n^2} \quad ; \quad \alpha = 3^{1/3} = 1.4$$

~~IN WHAT~~ WHAT RATE DOES $\{x_n\}$ CONVERGE TO α ?

FIND

$$r \approx \frac{\ln|\alpha - x_n|}{\ln|\alpha - x_{n-1}|} \quad \checkmark$$

x_n & x_{n-1} SHOULD BE NEAR α

$x \in [1.2, 1.5]$

IN PYTHON, IF I START

$x_n = -2.0$

$\{x_n\} \longrightarrow \alpha$ w/ ORDER,

$$r \approx \frac{\ln E_n}{\ln E_{n-1}} \approx 0.87$$

FOR $\{x_n\} \approx 26, 18, 12$