

→ Sorry I tried b., but very confused

Homework 6: DMB

Ezra Chechik

1. $L1 := \text{RandomLeslieMatrix}(A, k)$

with (linalg) → $\text{EVI} := [\text{Eigenvals}(L1)]$;

→ look at largest eigenvalue λ to determine behavior

Trial #1: Used $\text{RandomLeslieMatrix}(4, 3)$;

→ $\lambda = 0.459...$

population will go extinct

Trial #2: Used $\text{RandomLeslieMatrix}(4, 10)$;

→ $\lambda = 1.005...$

population will grow out of hand

Trial #3: will grow } $k=3$

Trial #4: will go extinct } $k=3$

Trial #5: will grow } $k=20$

Trial #6: will grow } $k=20$

Trial #7: will go extinct } $k=20$

Trial #8: will grow } $k=5$

Trial #9: will grow } $k=5$

Trial #10: will grow } $k=5$

(I did many times, almost all ↑)

(using remaining P to split)

2. S_1 : stay $p=0.5$, go away $p=0.1667$

S_2 : stay $p=0.4$, go away $p=0.2$

S_3 : stay $p=0.3$, go away $p=0.2333$

S_4 : stay $p=0.2$, go away $p=0.2667$

Transition Matrix

$$P = \begin{bmatrix} 0.5 & 0.1667 & 0.1667 & 0.1667 \\ 0.2 & 0.4 & 0.2 & 0.2 \\ 0.2333 & 0.2333 & 0.3 & 0.2333 \\ 0.2667 & 0.2667 & 0.2667 & 0.2 \end{bmatrix}$$