

Ok to post

1.)

```
A1 := RandomLeslieMatrix(5, 5);  
A1 := [ [0., 1., 0.3800000000, 1.970000000, 2.830000000, 3.520000000],  
        [0.1700000000, 0, 0, 0, 0, 0],  
        [0, 0.9000000000, 0, 0, 0, 0],  
        [0, 0, 0.3400000000, 0, 0, 0],  
        [0, 0, 0, 0.1800000000, 0, 0],  
        [0, 0, 0, 0, 0.5200000000, 0]]
```

eigenvalues(A1);

0.744009876892182

This population is doomed to extinction

```
A2 := RandomLeslieMatrix(5, 4);  
A2 := [[0., 3.120000000, 1.710000000, 0.8300000000, 0.2500000000, 0.9000000000],  
        [0.9300000000, 0, 0, 0, 0, 0],  
        [0, 0.6000000000, 0, 0, 0, 0],  
        [0, 0, 0.9300000000, 0, 0, 0],  
        [0, 0, 0, 0.1400000000, 0, 0],  
        [0, 0, 0, 0, 0.5000000000, 0]]
```

eigenvalues(A2);

1.88046962765714

This population will grow significantly.

```
A3 := RandomLeslieMatrix(5, 8);  
A3 := [[0., 3.790000000, 1.750000000, 0.08000000000, 3.620000000, 1.740000000],  
        [0.4400000000, 0, 0, 0, 0, 0],  
        [0, 0.09000000000, 0, 0, 0, 0],  
        [0, 0, 0.7700000000, 0, 0, 0],  
        [0, 0, 0, 0.5900000000, 0, 0],  
        [0, 0, 0, 0, 0.1600000000, 0]]
```

eigenvalues(A3);

1.32329157197859

This population will grow significantly.

```

A4 := RandomLeslieMatrix(5, 6);
A4 := [[0., 4.540000000, 0.7700000000, 0.3900000000, 5.830000000, 4.510000000],
[0.7800000000, 0, 0, 0, 0, 0],
[0, 0.5100000000, 0, 0, 0, 0],
[0, 0, 0.5300000000, 0, 0, 0],
[0, 0, 0, 0.1200000000, 0, 0],
[0, 0, 0, 0, 0.1900000000, 0]]

```

```

eigenvalues(A4);
1.93478504624529,
This population will grow significantly.

```

```

A5 := RandomLeslieMatrix(5, 6);
A5 := [[0., 4.470000000, 3.460000000, 1.770000000, 3.570000000, 2.020000000],
[0.9000000000, 0, 0, 0, 0, 0],
[0, 0.7400000000, 0, 0, 0, 0],
[0, 0, 0.2700000000, 0, 0, 0],
[0, 0, 0, 0.9800000000, 0, 0],
[0, 0, 0, 0, 0.7200000000, 0]]

```

```

eigenvalues(A5);
2.27203480631137,
This population will grow significantly.

```

2.)

```

a.) P = [[ 0.5   0.167  0.167  0.167],
[ 0.2   0.4    0.2    0.2 ],
[0.23  0.23   0.3    0.23],
[0.267 0.267  0.267  0.2 ]]

```

```

ev(P) = [0.6967460635, 0.6953996361, 0.6877119763, 0.6956706469])

```

```

Normalization of ev(P) : [[0.5014770614, 0.5012817021, 0.4957400208, 0.5014770614]])

```

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