

```

A = {{0, 1/2, 0, 1/2, 0, 0, 0, 0, 0},
      {1/3, 0, 1/3, 0, 1/3, 0, 0, 0, 0},
      {0, 1/2, 0, 0, 0, 1/2, 0, 0, 0},
      {1/3, 0, 0, 0, 1/3, 0, 1/3, 0, 0},
      {0, 1/4, 0, 1/4, 0, 1/4, 0, 1/4, 0},
      {0, 0, 1/3, 0, 1/3, 0, 0, 0, 1/3},
      {0, 0, 0, 0, 0, 0, 1, 0, 0},
      {0, 0, 0, 0, 1/3, 0, 1/3, 0, 1/3},
      {0, 0, 0, 0, 0, 1/2, 0, 1/2, 0}}

{{0, 1/2, 0, 1/2, 0, 0, 0, 0, 0}, {1/3, 0, 1/3, 0, 1/3, 0, 0, 0, 0}, {0, 1/2, 0, 0, 0, 1/2, 0, 0, 0},
 {1/3, 0, 0, 0, 1/3, 0, 1/3, 0, 0}, {0, 1/4, 0, 1/4, 0, 1/4, 0, 1/4, 0}, {0, 0, 1/3, 0, 1/3, 0, 0, 0, 1/3},
 {0, 0, 0, 0, 0, 0, 1, 0, 0}, {0, 0, 0, 0, 1/3, 0, 1/3, 0, 1/3}, {0, 0, 0, 0, 0, 1/2, 0, 1/2, 0}}

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MatrixForm[A]

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$$\begin{pmatrix} 0 & \frac{1}{2} & 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ \frac{1}{3} & 0 & \frac{1}{3} & 0 & \frac{1}{3} & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ \frac{1}{3} & 0 & 0 & 0 & \frac{1}{3} & 0 & \frac{1}{3} & 0 & 0 \\ 0 & \frac{1}{4} & 0 & \frac{1}{4} & 0 & \frac{1}{4} & 0 & \frac{1}{4} & 0 \\ 0 & 0 & \frac{1}{3} & 0 & \frac{1}{3} & 0 & 0 & 0 & \frac{1}{3} \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{3} & 0 & \frac{1}{3} & 0 & \frac{1}{3} \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & \frac{1}{2} & 0 \end{pmatrix}$$

```

pi0 = {1, 0, 0, 0, 0, 0, 0, 0, 0};
pi0x = pi0[[1 ;; 8]];
P = A[[1 ;; 8, 1 ;; 8]];
fp = A[[1 ;; 8, 9]];
N[pi0x.MatrixPower[P, 9].fp]
0.0442387

```