Source task and conventions

Compute the source example using its actual graph and teleport rate .14.

Conventional solution and proof

The ordered adjacency lists read from Figure 21.4 are

$$0:[2],\quad 1:[1,2],\quad 2:[0,2,3],\quad 3:[3,4],\quad 4:[6],\quad 5:[5,6],\quad 6:[3,4,6].$$

Let $W_{ij}=1/d_i$ on these outgoing links and zero elsewhere; then $P=(43/50)W+(1/50)\mathbf{1}\mathbf{1}^\top$. In particular its three-outlink entries are $23/75$, not exactly .31. Solve $[I-(43/50)W^\top]\pi=(1/50)\mathbf{1}$. Exact rational elimination gives

$$\pi=\left(\frac{10399}{199557},\frac{2}{57},\frac{7451}{66519},\frac{120049}{488775},\frac{730688299}{3422402550},\frac{2}{57},\frac{349755251}{1140800850}\right)^\top.$$

Numerically this is

$$(.05211042,.03508772,.11201311,.24561199,.21350156,.03508772,.30658747)^\top.$$

It sums exactly to one and satisfies the exact stationary equations. Rounding each component to two decimal places reproduces $(.05,.04,.11,.25,.21,.04,.31)$. The rounded printed vector sums to 1.01, and two rounded printed transition rows also sum to 1.01; these are display-rounding effects, not a stochastic model to use unchanged.