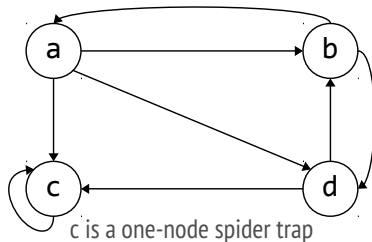


Spider traps

- **Spider trap:** set of nodes with no dead ends but no links out.
- **Problem:**
 - All random surfers end up in the spider trap.



- **Transition matrix:**

$$\begin{bmatrix} 0 & 1/2 & \mathbf{0} & 0 \\ 1/3 & 0 & \mathbf{0} & 1/2 \\ 1/3 & 0 & \mathbf{1} & 1/2 \\ 1/3 & 1/2 & \mathbf{0} & 0 \end{bmatrix}$$

- \vec{v} **converges to** $\vec{v} = [0, 0, 1, 0]$.