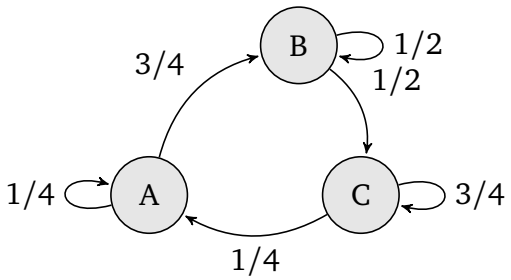
Math 1553 Worksheet §5.6 and §6.1

1. There are three webpages linked in the following graph. For example, all people viewing page A will have $1/4$ still viewing page A in the next hour, $3/4$ switched to page B, etc.

(1) Identify the transition matrix and then compute the steady state vector. In the long run which webpage will have the highest ranking.



2. True/False

(1) If u is in subspace W, and u is also in $W^{\perp}$, then $u = 0$.

(2) If y is in subspace W, the orthogonal projection of y onto W is y.

(3) If x is orthogonal to v and w, then x is also orthogonal to $v - w$.

3. Give examples

(1) two linearly independent vectors that are orthogonal to $\begin{pmatrix} 2 \\ 0 \\ -1 \end{pmatrix}$.

(2) a subspace of $\mathbf{R}^3$, S, such that $\dim(S^{\perp}) = 2$.