Recall that for our PageRank example, we solved the system \( Ax = x \), where

\[
A = \begin{bmatrix}
0 & 0 & 1 & 1/2 \\
1/3 & 0 & 0 & 0 \\
1/3 & 1/2 & 0 & 1/2 \\
1/3 & 1/2 & 0 & 0
\end{bmatrix}
\]

We obtained the RREF

\[
\begin{bmatrix}
1 & 0 & 0 & -2 \\
0 & 1 & 0 & -2/3 \\
0 & 0 & 1 & -3/2 \\
0 & 0 & 0 & 0
\end{bmatrix}
\]

and the solution

\[ x_1 = 12, \ x_2 = 4, \ x_3 = 9, \ x_4 = 6. \]

So this ranking ranks page 1 the highest, then page 3, then page 4, and finally page 2.

In the process of developing this system, we came up with a preliminary system \( Bx = x \), where

\[
B = \begin{bmatrix}
0 & 0 & 1 & 1 \\
1 & 0 & 0 & 0 \\
1 & 1 & 0 & 1 \\
1 & 1 & 0 & 0
\end{bmatrix}
\]

With this system we didn’t scale the contribution of a page by the number of its outgoing or “forward” links. Solve the system \( Bx = x \). How does the ranking provided by this system compare to the ranking provided by the preceding system?