Left side of the classroom: do Q1 then Q3 then Q2. Right side: do Q2 then Q3 then Q1.

Work with the following graph $G$:

![Graph Diagram]

1. **PageWalk**
   Let $T(v)$ be the fraction of time spent at vertex $v$, in the graph $G$ above, if you start at a random vertex in the graph and then do a random walk for a very long period. Fill in the table below with the value of $T(v)$ for each vertex in $G$. I filled in a few entries for you.

   $\begin{array}{cccc}
   T(a) & T(b) & T(c) & T(d) \\
   0.1 & & 0.4 & \\
   \end{array}$

   Hint if you get stuck: Start by finding $T(b)$. Take advantage of the entries I’ve already filled in for you.

2. **PageVote**
   Let $I_v$ be the importance PageVote assigns to vertex $v$, for the graph above. Write down linear equations for $I_a, I_b, I_c, I_d$, then solve them and fill in the table below with your solution. I filled in a few of them for you.

   \[
   \begin{align*}
   I_a &= \\
   I_b &= I_d/2 \\
   I_c &= I_a + I_d/2 \\
   I_d &= \\
   I_a + I_b + I_c + I_d + I_e &= 1 \\
   \end{align*}
   \]

   $\begin{array}{cccc}
   I_a & I_b & I_c & I_d \\
   0.2 & & 0.4 & \\
   \end{array}$

3. **PageWalk vs PageVote: Which is better?**
   Which do you think would be a better system for ranking the importance and credibility of web pages: PageWalk, or PageVote? Why?