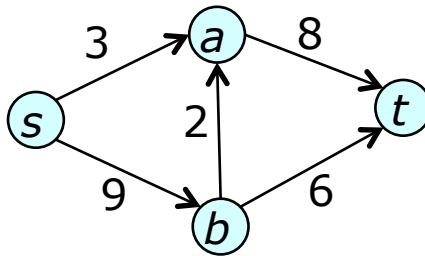


Review Questions 14

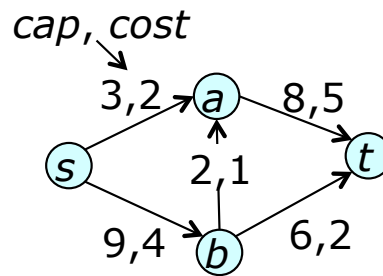
Your Name:

Please print out this form (two-sided, if you can) and write your answers *legibly* in the spaces provided. If you can't write legibly, type.

1. Formulate the max flow problem shown below as a linear program in standard matrix form.



2. Formulate the min-cost max flow problem shown below as a linear program in standard matrix form. You need only show the differences from the answer to question 1.



3. Explain why a matrix that includes a 2×2 submatrix with entries $+1$ and $+1$ in the first row and $+1$ and -1 in the second is not totally unimodular. Explain why such submatrix cannot appear within the coefficient matrix of the max flow problem.