

## CSE 5319/6319 Homework 5

Due May 3, 1:30 p.m. on Canvas

1. For <https://ranger.uta.edu/~weems/NOTES6319/AUCTION/auction2.dat>:
  - a. Find a maximum-weight bipartite matching via ascending auction.
  - b. Compute the lowest envy-free price vector (KP Theorem 17.2.6).
  - b. Compute the highest envy-free price vector (Corollary 17.2.9).
  - c. Solve fair division (KP section 17.3) using the above envy-free price vectors for a 5-room apartment with monthly rent of \$1000.
2. Determine a minimum-weight bipartite matching for <https://ranger.uta.edu/~weems/NOTES6319/AUCTION/auction2.dat>.
3. How many maximum-weight bipartite matchings are there for <https://ranger.uta.edu/~weems/NOTES6319/AUCTION/auction4.dat?>
4. How many maximum-weight bipartite matchings are there for <https://ranger.uta.edu/~weems/NOTES6319/AUCTION/auction5.dat?>
5. Use Gambit to compute Nash equilibria for:

$$A = \begin{bmatrix} 3 & 3 \\ 2 & 5 \\ 0 & 6 \end{bmatrix} \quad B = \begin{bmatrix} 3 & 2 \\ 2 & 6 \\ 3 & 1 \end{bmatrix}$$