| ENGRI 1101 | Engineering Applications of OR | Fall 2020 | Prelab 7 |
|---|---|---|---|

# LPs and the Simplex Method

## Name: _____

**Objectives:**

- Introduce the simplex method to solve linear programs.
- Understand the geometry of linear programs and the trajectory traced by the simplex method.

**Key Ideas:**

- dictionary
- feasible region
- isoprofit lines

**Reading Assignment:**

- Read Handout 8 on linear programming and the simplex method.

**Prelab Exercise:**

Open the tool at `http://engri1101.orie.cornell.edu/2d_lp_example/2d_lp_example.html`.

Use the objective function slider to review the optimal solution obtained by the graphical method. What is the optimal value? (And then return the slider back to 0.)

Use the iteration slider to advance step by step through the dictionaries computed by the simplex method. For each dictionary computed along the way, write out the objective function and the corresponding solution to that dictionary.

Return to the dictionary for iteration 0. In the first iteration, the variable increased was $x_2$. Just by looking at the graph, determine the solution that would correspond to the dictionary found after the first iteration if, instead, we increased $x_1$.