

Homework: Linear Programming Problems.

Due Tuesday, February 15.

- I. A. Make sure you can do problems 1-4 on pages 508-509. Do not turn in your solutions to these problems, except those listed below.
 - B. Do problems 1 and 4 on page 508-509, showing the following steps in your work:
 - For number 4: Graph the system of inequalities, shading in the feasible region. Make the graph fill up half a page, so it doesn't get too messy. For number 1, copy the graph into your homework. It does not have to be huge, but don't make it tiny.
 - On the graphs, label the lines that bound the feasible region with their formulas. (On number 1, you will have to figure out the formulas for the lines from their graphs.)
 - Find the coordinates (x, y) of the vertices of the feasible region. On number 1, you can read these off the graph. On number 4, you should solve for the coordinates using the formulas.
 - Make a table with one column showing the coordinates (x, y) of the vertices and the other showing the value of the objective function at the corresponding vertex.
 - Answer the question: what are the coordinates of the maximum and the minimum of the given objective function.
- II. A. Read the Focus on Modelling pages 504-511.
 - B. Make sure that you can do problems #5-12 on pages 509-510. Do not turn in your solutions to all of these problems, except those listed below.
 - C. Do problems #8 and #10, showing the following steps in your work:
 - Write down what variables you are going to use and what they stand for.
 - Write the system of inequalities given by the constraints in the problem. Label these "constraints." Write a short explanation of how you obtained each inequality. For example, if x is the number of oranges, and the problem says there are at least 10 oranges, then you might write:
"We know $x \geq 10$, since there are at least 10 oranges."
 - Write the objective function, and label it. (On number 8, there will be an objective function for part (a) and an objective function for part (b)).
 - Graph the system of inequalities, shading in the feasible region. Make the graph fill up half a page.
 - On the graphs, label the lines that bound the feasible region with their formulas.
 - Find the coordinates of the vertices of the feasible region. You should solve for the coordinates using the formulas for the lines.
 - Make a table with one column showing the coordinates of the vertices and the other showing the value of the objective function at the corresponding vertex. (For number 8, you should have a table for part (a) and a table for part (b). Mark the coordinates in your table where the maximum or minimum of the objective function is obtained.
 - Answer the original questions given in the problems in sentences.