Name: _____

MATH 108

Fall 2022

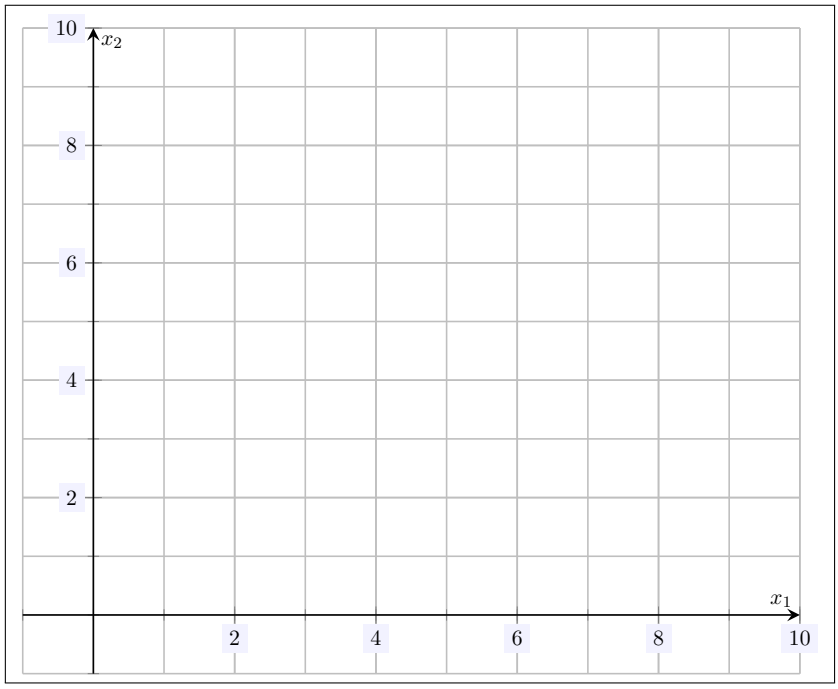
HW 18: Due 12/06

"True optimization is the revolutionary contribution of modern research to decision processes."

–George Dantzig

Problem 1. (10pt) As accurately as possible, sketch the feasible region given by the following maximization problem on the plot below:

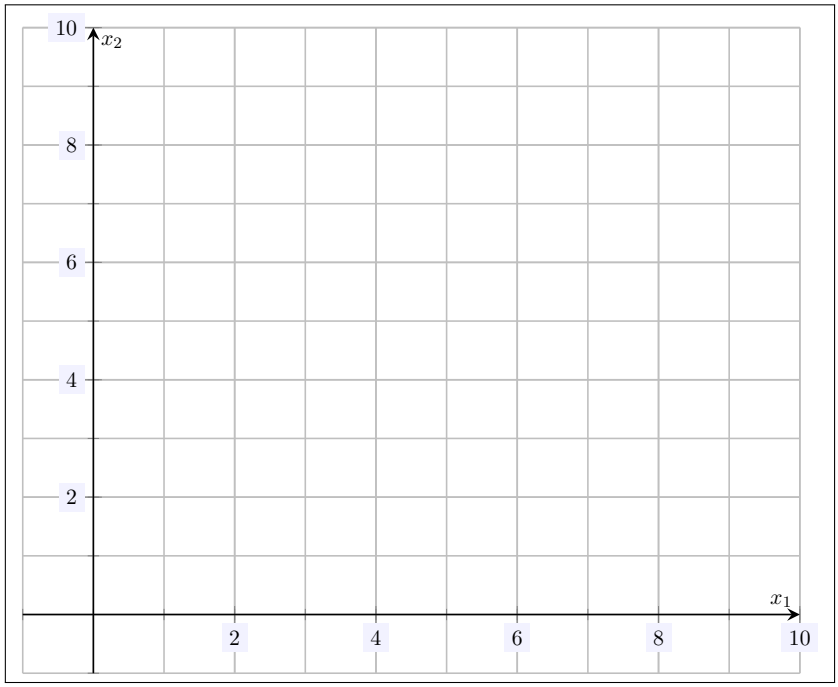
$$\begin{aligned} \max z = 4x_1 + 6x_2 \\ -x_1 + 5x_2 \leq 5 \\ x_1 + x_2 \leq 11 \\ x_1, x_2 \geq 0 \\ x_2 \leq 7 \end{aligned}$$



Is this region nonempty? Is this region bounded or unbounded? Solve this maximization problem.

As accurately as possible, sketch the feasible region given by the following maximization problem on the plot below:

$$\begin{aligned} \min\ z &= 4x_1 + 6x_2 \\ 2x_1 + x_2 &\geq 6 \\ 2x_1 + 3x_2 &\geq 10 \\ x_1, x_2 &\geq 0 \end{aligned}$$



Is this region nonempty? Is this region bounded or unbounded? Solve this minimization problem.