

Introductory Optimization Problem

For the following optimization problem, answer the following questions. When each section is completed, compare answers and discuss with a neighbor.

Maximize $x_1 + x_2$

Subject to $x_1^2 + x_2^2 > 1$

$$x_1^2 + x_2^2 < 2$$

$$x_1 > 0$$

$$x_2 > 0$$

Part a) Plot the feasible space constraints with solid lines.

Part b) Shade the feasible region.

Part c) Plot objective contours at integer increments of $x_1 + x_2 = 1$, $x_1 + x_2 = 2$, etc.

Part d) Identify the optimal solution within the feasible space region.

