MTH 210: Lab 9

Use **nloptr** function from library('nloptr') to solve the following optimization problems. Supply "algorithm"= "NLOPT_GN_ISRES" while using **nloptr**.

P 1. Find a solution of the problem $\min f(x, y) = -xy$ given that $x + y^2 \leq 2$, $x, y \geq 0$.

P 2. Find a solution of the problem $\min f(x, y) = 2x + y$ given that $\sqrt{x^2 + y^2} \leq 2$, $x \geq 0$, and $y \geq 0.5x - 1$.

P 3. Find a solution of the problem $\min f(x_1, \ldots, x_4) = x_1^2 + x_2^2 + x_3^2 + x_4^2$ given that $x_1 + x_2 + x_3 + x_4$, $x_4 \geq A$. Consider three cases; (i) $A < 1/4$, (i) $A = 1/4$, and (i) $A > 1/4$.