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Master Mathematics
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Exercise 01

Give the necessary condition theorem for optimizing linear programming with inequality constraints

Exercise 02

Consider the following problem

$$\begin{cases} f(x,y) = x(1+\frac{\pi}{2}) + 2y \\ st \\ g(x,y) = 2 - xy - \frac{\pi}{8}x^2 \end{cases}$$

Find the solution of this problem in $\mathbb{R}_+$ (Use Lagrange method).

Exercise 03

Consider the problem

$$\begin{cases} \min f(x,y) = 2x^2 + 2xy + y^2 - 10x - 10y \\ st \\ g_1(x,y) = x^2 + y^2 - 5 \leq 0 \\ g_2(x,y) = 6x + 2y - 12 \leq 0 \\ (x,y) \in \mathbb{R}^2 \end{cases} \quad (1)$$

- Prove the existence and uniqueness of the solution
- Define an active point and provide an example
- Solve the problem **(1)**