Minimálna kostra

K danej úlohe napísať Lagrangeovu funkciu, jej definičný obor a schému Kuhn-Tuckerových podmienok.

Ukážka: V zadaní je úloha

$$Min\{x_1^2 + 4x_1x_2 + 3x_2x_3 + x_3^2 \mid x_1^2 + 2x_2^2 \leq 7,\ x_1 + x_3 \geq 1, x_1 - 5x_2 = 1, x_1 \geq 0, x_3 \geq 0\}$$

Riešenie:

$$L : (\mathbb{R}_+ \times \mathbb{R} \times \mathbb{R}_+) \times (\mathbb{R}_+ \times \mathbb{R}_+ \times \mathbb{R}) \to \mathbb{R}$$

$$L(x_1, x_2, x_3; u_1, u_2, u_3) = x_1^2 + 4x_1x_2 + 3x_2x_3 + x_3^2 + u_1(x_1^2 + 2x_2^2 - 7) + u_2(1 - x_1 - x_3) + u_3(x_1 - 5x_2 - 1)$$

x_1	x_2	x_3	u_1	u_2	u_3
$\frac{\partial L}{\partial x_1} \geq 0$	$\frac{\partial L}{\partial x_2} = 0$	$\frac{\partial L}{\partial x_3} \geq 0$	$\frac{\partial L}{\partial u_1} \leq 0$	$\frac{\partial L}{\partial u_2} \leq 0$	$\frac{\partial L}{\partial u_3} = 0$
$\frac{\partial L}{\partial x_1} x_1 = 0$		$\frac{\partial L}{\partial x_3} x_3 = 0$	$\frac{\partial L}{\partial u_1} u_1 = 0$	$\frac{\partial L}{\partial u_2} u_2 = 0$	
$x_1 \geq 0$		$x_3 \geq 0$	$u_1 \geq 0$	$u_2 \geq 0$	