

$$f = xyz$$

$$K: x^2 + y^2 + z^2 = 1$$

$$x + y + z = 0$$

↓
sféra

↓
rovina

} kružnice
(řezno v prostoru)

• K je součet \Rightarrow křivka (jako minule)

f je spoj. \Rightarrow spoj. křivka nebylo extrémů

$$g_1 = x^2 + y^2 + z^2 - 1$$

$g_{1,2}, f \in C^1(\mathbb{R}^3)$

$$g_2 = x + y + z$$

$$\nabla g_1 = (2x, 2y, 2z)$$

$$Lz \Leftrightarrow \begin{cases} 2x = \lambda \\ 2y = \lambda \\ 2z = \lambda \end{cases} \Rightarrow x = y = z$$

$$\nabla g_2 = (1, 1, 1)$$

condition: $3x^2 = 1$ & $3x = 0$ spr

základní podezřelý bod

• Lagr. mult.

$$\begin{cases} yz + \lambda 2x + \mu \cdot 1 = 0 \\ xz + \lambda 2y + \mu \cdot 1 = 0 \\ xy + \lambda 2z + \mu \cdot 1 = 0 \end{cases} \text{ odčteme}$$

$$yz + 2\lambda x - xz - 2\lambda y = 0$$

$$z(y-x) - 2\lambda(y-x) = 0$$

$$(z-2\lambda)(y-x) = 0$$

$$x^2 + y^2 + z^2 = 1$$

$$x + y + z = 0$$

$$z = 2\lambda$$

$$y = x$$

$$2x + z = 0$$

$$z = -2x$$

$$x^2 + y^2 + 4x^2 = 1$$

$$x^2 = \frac{1}{6}$$

$$x = \pm \frac{1}{\sqrt{6}}$$

$$2\lambda x + 2\lambda y + \mu = 0$$

$$xy + 2\lambda \cdot 2\lambda + \mu = 0$$

$$2\lambda x + 2\lambda y - xy - 2\lambda \cdot 2\lambda = 0$$

$$x(2\lambda - y) - 2\lambda(2\lambda - y) = 0$$

$$(x-2\lambda)(2\lambda - y) = 0$$

$$x = 2\lambda = z$$

$$y = 2\lambda = z$$

$$x = -2z$$

$$y = -2x$$

$$6x^2 = 1$$

$$x = \pm \frac{1}{\sqrt{6}}$$

$$6z^2 = 1$$

$$z = \pm \frac{1}{\sqrt{6}}$$

$$+ \left[\frac{1}{\sqrt{6}}, \frac{-2}{\sqrt{6}}, \frac{1}{\sqrt{6}} \right]$$

$$+ \left[\frac{-2}{\sqrt{6}}, \frac{1}{\sqrt{6}}, \frac{1}{\sqrt{6}} \right]$$

$$\text{Max } v \left[\frac{1}{\sqrt{6}}, \frac{2}{\sqrt{6}}, \frac{-1}{\sqrt{6}} \right], \left[\frac{2}{\sqrt{6}}, \frac{1}{\sqrt{6}}, \frac{-1}{\sqrt{6}} \right], \left[\frac{-1}{\sqrt{6}}, \frac{-1}{\sqrt{6}}, \frac{2}{\sqrt{6}} \right]$$

$$\text{Min } v \left[\frac{1}{\sqrt{6}}, \frac{-2}{\sqrt{6}}, \frac{1}{\sqrt{6}} \right], \left[\frac{-2}{\sqrt{6}}, \frac{1}{\sqrt{6}}, \frac{1}{\sqrt{6}} \right], \left[\frac{-1}{\sqrt{6}}, \frac{1}{\sqrt{6}}, \frac{2}{\sqrt{6}} \right]$$