

$f: \mathbb{R}^m \rightarrow \mathbb{R}^n$
 $m=1, n=1$ ✓
 $m=2, n=1$
 $f: \mathbb{R}^2 \rightarrow \mathbb{R}^1$
 $\mathbb{R} \ni x \mapsto Ax + y \in \mathbb{R}^1$
 optimal solution
 $y_j = \sum a_{ij} x_i + b_j$
 $m, n=1, \text{ lineár ob.}$
 $\mathbb{R} \ni x \mapsto x^T S \cdot x = \sum_{i,j} s_{ij} x_i x_j$
 $\begin{pmatrix} A \end{pmatrix} \begin{pmatrix} x \end{pmatrix} = \begin{pmatrix} \end{pmatrix}$

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$f(x, y) = \ln(x^2 - y^2)$
 $x^2 - y^2 = (x-y)(x+y) > 0$
 $g(x, y) = f(x, \epsilon x)$
 $= \ln((1 - \epsilon^2)x^2)$
 $= \ln(1 - \epsilon^2) + 2 \ln x$
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$z = x + y$
 $y = \frac{x}{x^2} = x^{-1}$

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$f(x, y) = \ln(x^2 - y^2)$
 $\frac{\partial f}{\partial x} = f_x = \frac{1}{x^2 - y^2} \cdot 2x$
 $= \frac{2x}{x^2 - y^2}$
 $\frac{\partial f}{\partial y} = f_y = \frac{-2y}{x^2 - y^2}$

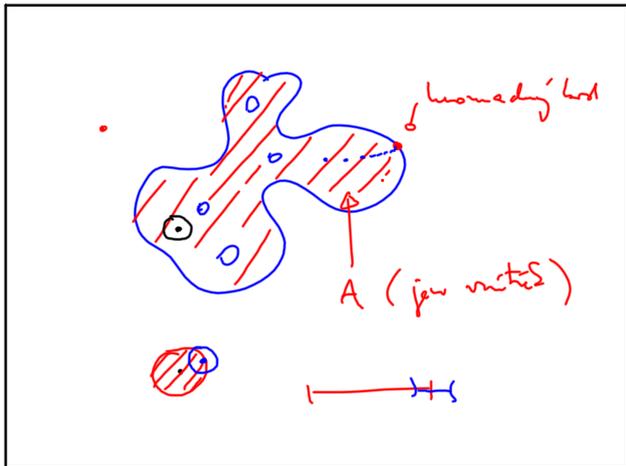
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$E_n = \mathbb{R}^n$
 $\|v\| = \sqrt{x^2 + y^2}$
 $\|P - Q\| = \|v\|$

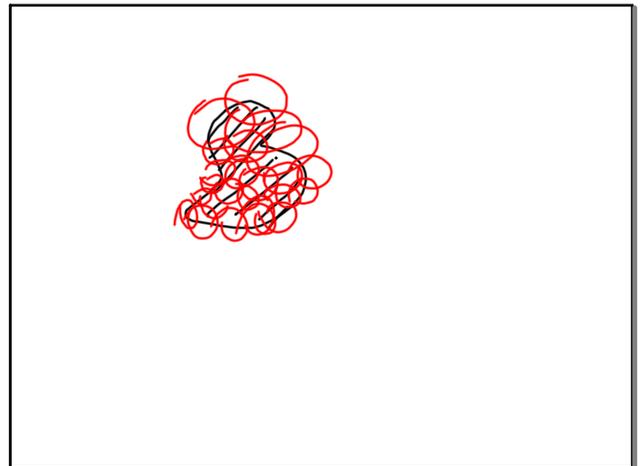
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$\mathbb{R}^2 \supset \mathbb{Q}^2$
 $\mathbb{R}^n \ni P_n = (x_n^1, x_n^2, \dots, x_n^n)$
 $\lim_{n \rightarrow \infty} P_n = \left(\lim_{n \rightarrow \infty} x_n^1, \dots, \lim_{n \rightarrow \infty} x_n^n \right)$

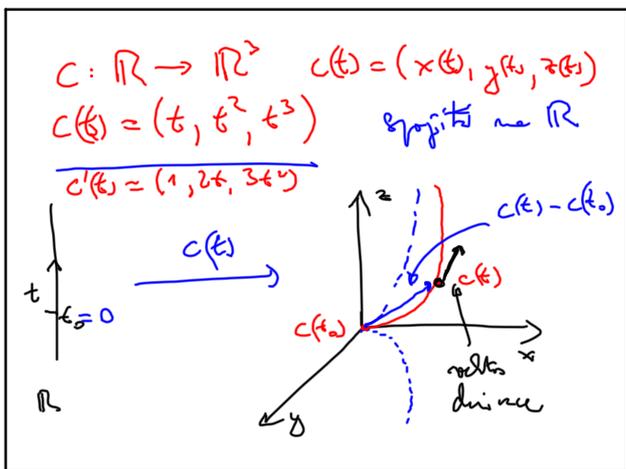
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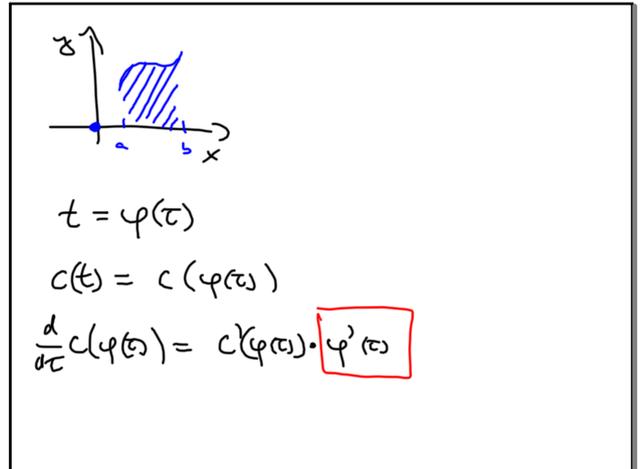
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