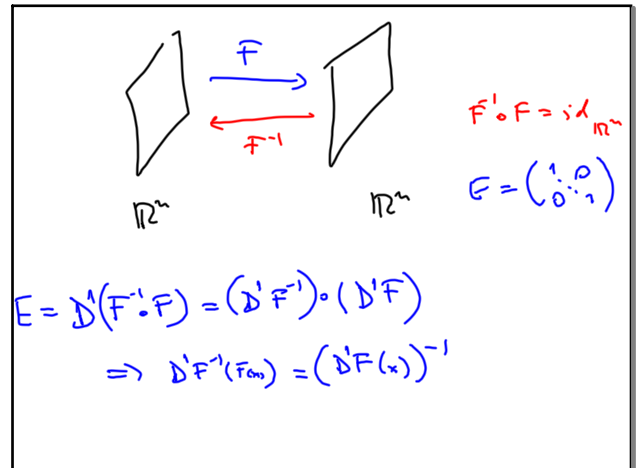
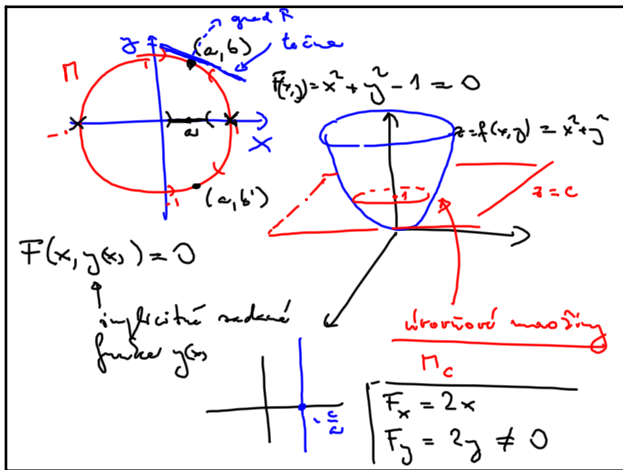


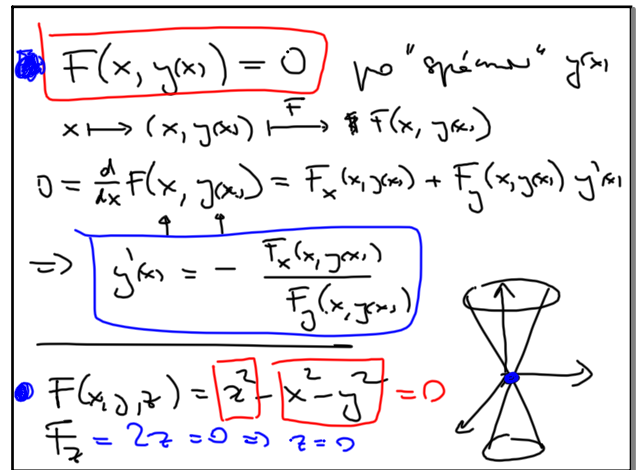
10 11-15:59



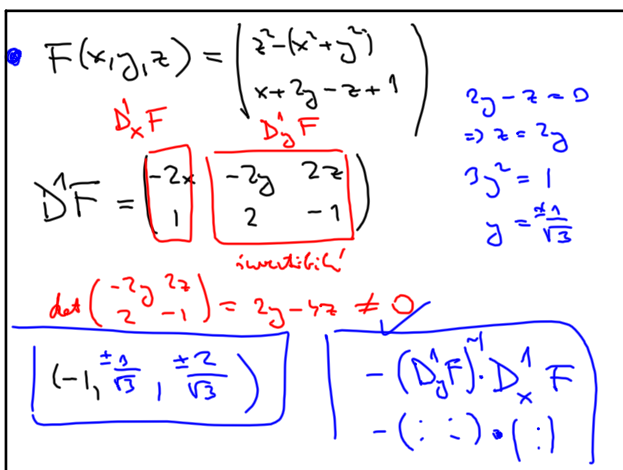
10 11-16:10



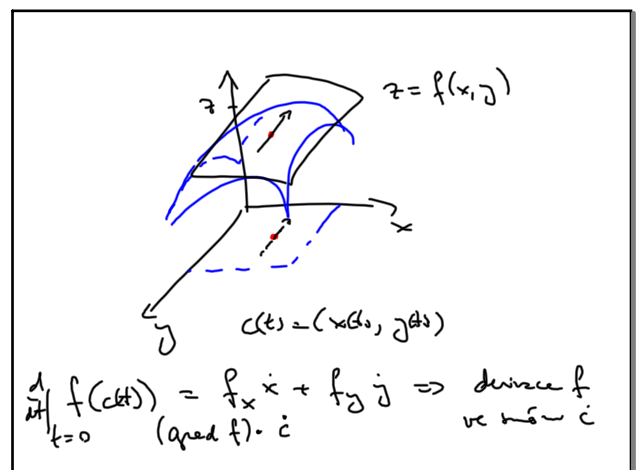
10 11-16:14



10 11-16:28



10 11-16:40

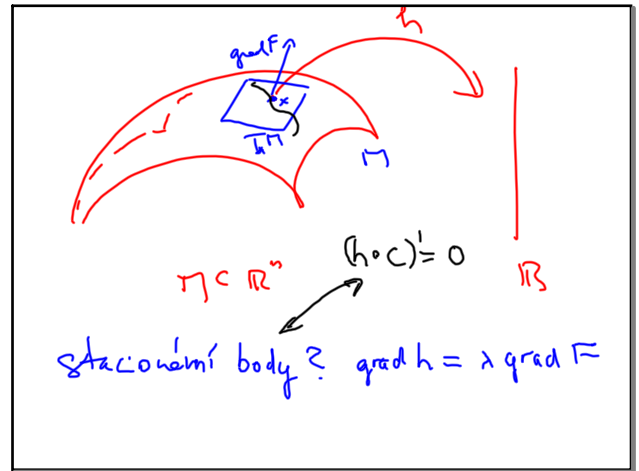


10 11-16:56

$$M_c = \{(x_1, \dots, x_n) \in \mathbb{R}^n, F(x_1, \dots, x_n) = c\}$$

$$\text{grad } F \perp \{ \text{tangent plane to } M_c \}$$

10 11-17:00



10 11-17:09

$F(x, y) = x^2 + y^2 = 1$
 $h(x, y) = xy$

$h_x = y, h_y = x$
 $F_x = 2x, F_y = 2y$

$x = \lambda 2x, y = \lambda 2y$
 $x^2 + y^2 = 1$

$x=0, y \neq 0 \Rightarrow \lambda = 0$
 $x \neq 0, y \neq 0 \Rightarrow \lambda = \frac{y}{2x} = \frac{x}{2y} \Rightarrow y^2 = x^2 \Rightarrow y = \pm x$

4 stacionární body $(\pm \frac{1}{\sqrt{2}}, \pm \frac{1}{\sqrt{2}})$

10 11-17:17

jak dít? (x, y) - stacionární

$$h(x+u, y+v) = h(x, y) + D h(x, y) \cdot \begin{pmatrix} u \\ v \end{pmatrix} + \frac{1}{2} (u \ v) \cdot H h(x, y) \cdot \begin{pmatrix} u \\ v \end{pmatrix}$$

opět funguje, ale je to $(u \ v) \perp \text{grad } F$.

$\text{grad } F = (2x \ 2y)$ $(\text{grad } F)^\perp = (y \ -x)$

$H h(x, y) = \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$

$$\begin{pmatrix} \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} \\ 1 & 0 \end{pmatrix} \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix} \begin{pmatrix} \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} \end{pmatrix} = \begin{pmatrix} \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} \end{pmatrix} \cdot \begin{pmatrix} \frac{\sqrt{2}}{2} \\ -\frac{\sqrt{2}}{2} \end{pmatrix} = \begin{pmatrix} \frac{1}{2} & \frac{1}{2} \\ \frac{1}{2} & \frac{1}{2} \end{pmatrix} = +1 \checkmark$$

10 11-17:27

$\tilde{h} = h - \lambda F$

$$\begin{cases} \tilde{h}_x = h_x - \lambda F_x = 0 \\ \tilde{h}_y = h_y - \lambda F_y = 0 \\ F = 0 \end{cases} \Rightarrow \text{stacionární body}$$

$H \tilde{h} = \begin{pmatrix} ? \\ ? \end{pmatrix}$

10 11-17:40