DN. 11

NAJ BO $\vec{p}(t) = (t^2 - t, t+2, t^4)$, $t \in [0,1]$

POKAŽI, DA JE $\vec{p}(t)$ ENOSTAVNA, REGULARNA POT RAZREDA C^∞.

1) RAZRED C^∞

$$\dot{\vec{p}}(t) = (2t-1, 1, 4t^3)$$

$$\ddot{\vec{p}}(t) = (2, 0, 12t^2)$$

$$\dddot{\vec{p}}(t) = (0, 0, 24t)$$

$$\vec{p}^{(4)}(t) = (0, 0, 24)$$

$$\vec{p}^{(5)}(t) = (0,0,0) = p^{(6)}(t) = p^{(7)}(t) \ldots$$

$\vec{p}(t)$ je torej razreda C^∞

2) ENOSTAVNA ($\vec{p}$ JE INJEKTIVNA)

$$\vec{p}(t_1) = \vec{p}(t_2) \Rightarrow t_1 = t_2$$

$$(t_1^2 - t_1, t_1+2, t_1^4) = (t_2^2 - t_2, t_2+2, t_2^4) \Rightarrow$$

$$\Rightarrow t_1^2 - t_1 = t_2^2 - t_2,\ t_1+2 = t_2+2,\ t_1^4 = t_2^4 \Rightarrow t_1 = t_2$$

3) REGULARNA ($\vec{p}(t)$ C^1, $\dot{\vec{p}}(t) \neq 0$)

$$\dot{\vec{p}}(t) = (2t-1, 1, 4t^3) \neq 0,$$ SAJ JE

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