$t \mapsto 1-t$

$$B_i^n(t) = \binom{n}{i} t^i (1-t)^{n-i} \qquad B_1^3(t) = 3t(1-t)^2$$

jev s pravděp. $t \in \langle 0,1\rangle$ $\boxed{\binom{n}{i} = \binom{n}{n-i}}$ $t = 0{,}3$

$$B_i^n(t) \geq 0 \quad \text{pro } t \in \langle 0,1\rangle$$

n pevné $\displaystyle\sum_{i=0}^{n} B_i^n(t) = 1 \quad \forall t \in \mathbb{R}$

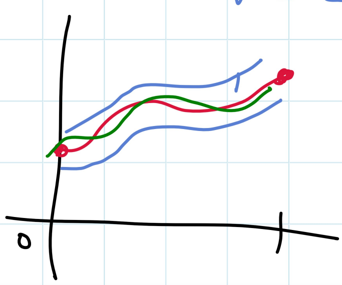
$\boxed{n \text{ - pevné}}$ Báze polynomů st. nejvýše $n$ $P_n[t]$ dim $= n+1$

$$p(t) = \sum_{i=0}^{n} p_i B_i^n(t)$$

$$\mathbb{R}^{n+1} \longrightarrow P_n[t]$$

$$(p_0, \dots, p_n) \longmapsto p(t)$$

$$\forall \varepsilon\ \exists p \quad \|f - p\|_\infty < \varepsilon$$




$\cancel{t^3{}' = 3t^2}$

MAX.

$$B_i^n(t)' = \binom{n}{i}\left[i t^{i-1} \cdot (1-t)^{n-i} - t^i (n-i)(1-t)^{n-i-1}\right]$$

$$= \left[\frac{\binom{n}{i}}{\binom{n-1}{i-1}} \cdot i\right] B_{i-1}^{n-1}(t) - \left[\frac{\binom{n}{i}}{\binom{n-1}{i}}(n-i)\right] B_i^{n-1}(t)$$

$B_{i-1}^{n-1}(t) = \binom{n-1}{i-1} \cdot t^{i-1} (1-t)^{n-i}$

$$\frac{\frac{n!}{i!\,\cancel{(n-i)!}}}{\frac{(n-1)!}{(i-1)!\,\cancel{(n-i)!}}} \cdot i = \frac{n}{i} \cdot i = n$$

$\underline{\binom{n}{i} t^{i-1} (1-t)^{n-i-1}} \geq 0$

$[i(1-t) - (n-i)t] = 0 \iff t = \frac{i}{n}$ + −

$m=3 \quad i=1$

$$B_1^3(t) = (1-t)\,B_1^2(t) + t\cdot B\binom{2}{0}(t)$$

$$\underline{3t\cdot(1-t)^2} = (1-t)\,2\cdot t\cdot(1-t) + t\cdot 1\cdot(1-t)^2 =$$

$$3 = 2+1$$

```
      1
    1   1
  1   2   1
1   3   3   1
```

$m=3 \quad i=0$

$$B_0^3(t) = (1-t)\,B_0^2(t) + \cancel{t\,B_{-1}^2}$$

$$= (1-t)^3 \qquad\qquad B_0^2 = (1-t)^2$$

$$B_0^m(t) = (1-t)^m$$

$$B_m^m = t^m$$

$$\mathcal{P}_3 \qquad\qquad \mathcal{P}_4$$

$$\mathcal{L}o\{1, t, t^2, t^3\} \leq \mathcal{L}o\{1, t, t^2, t^3, t^4\}$$

$$\mathcal{L}o\{B_0^3, \boxed{B_1^3}, B_2^3, B_3^3\} \leq \mathcal{L}o\{B_0^4, B_1^4, B_2^4, B_3^4, B_4^4\}$$

$$\begin{matrix} 0 & 0 & 1 & 0 & 0 \end{matrix}$$

$$B_1^3(t) = \frac{3}{4}\,B_1^4(t) + \frac{2}{4}\,B_2^4(t)$$

$LS = 3t\cdot(1-t)^2$

$$PS = \frac{3}{4}\cdot 4\,t(1-t)^3 + \frac{2}{4}\cdot 6\cdot t^2(1-t)^2 =$$

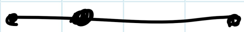
$$= t(1-t)^2\left[3(1-t) + 3t\right] = 3t(1-t)^2$$

$$c(t) = \sum_{i=0}^{m} P_i\cdot B_i^m(t)$$

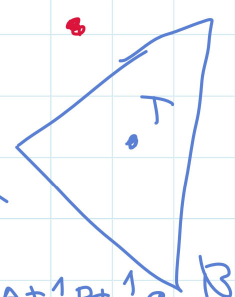
zapisujem x

$\Leftarrow$

LK bodici

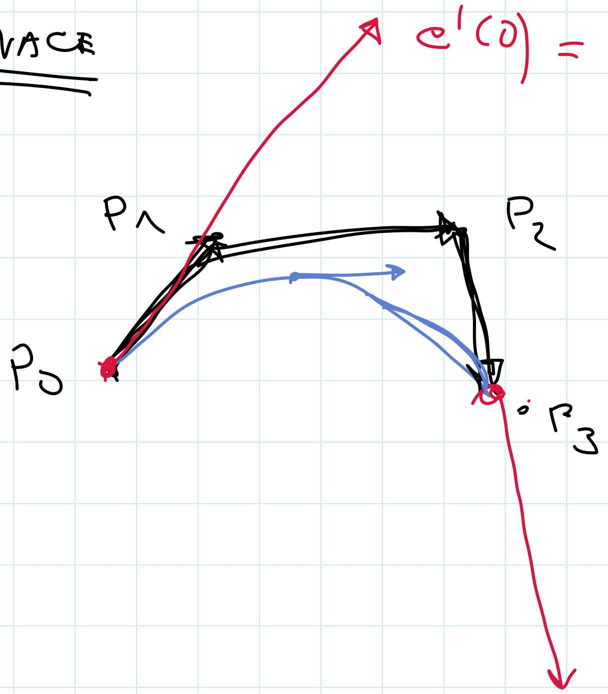
A  B

$$\frac{2}{3}A + \frac{1}{3}B$$




$$T = \frac{1}{3}A + \frac{1}{3}B + \frac{1}{3}C$$

# DERIVACE




$c'(0) = 3\,(P_1 - P_0)$

$c'(1) = 3\,(P_3 - P_2)$

# DEGREE ELEVATION