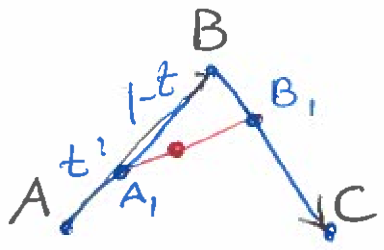


$t = \frac{1}{3}$

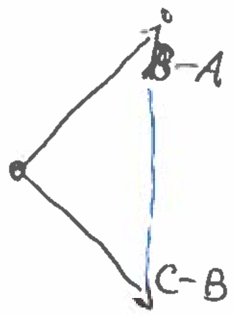
$n=2$

$$p(t) := A(1-t)^2 + B\,2(1-t)t + Ct^2$$

$$= \big(\underbrace{A(1-t)+Bt}\big)(1-t) + \big(\underbrace{B(1-t)+Ct}\big)t$$

$$= \underbrace{A_1 \quad (1-t) + \quad B_1 \quad t}$$

$\times 2$



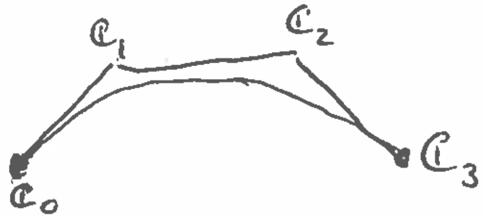
$$p'(t) = 2\left[B(1-t) - A(1-t) + Ct - Bt\right]$$

$$= 2\left[(B-A)(1-t) + (C-B)t\right]$$

$i+j=n$

Bezier form basis: $b_i^n(t) := \frac{n!}{(n-i)!\,i!}\underbrace{(1-t)}_{s}^{n-i} t^i$ $\quad s+t=1$

$n=3$



$$p_3(t) := \sum c_i\, b_i^3(t)$$

$$p_3(0) = c_0 \qquad b_i^3(0) = \begin{cases} 0 & \text{else} \\ 1 & i=0 \end{cases}$$

$$p(t) = \sum c_i\, b_i^3(t)$$

1st difference

$$p'(t) = 3\sum \underbrace{(c_{j+1} - c_j)}\, b_j^2(t)$$

"one"

$$p''(t) = 3\cdot 2\left(\sum (c_{k+2} - 2c_{k+1} + c_k)\, b_k^1(t)\right)$$

2nd difference

$$\underbrace{(c_{k+2} - c_{k+1}) - (c_{k+1} - c_k)}$$

$$c_{k+2} - 2c_{k+1} + c_k$$

$$1 \quad -2 \quad 1$$