**B-spline formulation**

m: number of knots (1,…,m)

n: B-spline order (2- quadratic, 3- cubic,…; starting from 0)



note 1: number of knots m is determined by the number of control points and the B-spline order, i.e., m= number of control points + order n + 1

note 2: number of segments is equal to number of control points – B-spline order

note 3: knot vector are defined so that both ends are clamped. The MATLAB codes look like following:

self.kvec= [zeros(1,self.order) linspace(0,1,self.nSeg+1),… ones(1,self.order)];

For example, if there are 5 control points and the B-spline order is 3, then

* the number of knots is 5+3+1=9
* the number of segments 5-3= 2
* the knot vectors will be [0 0 0 0 ½ 1 1 1 1]