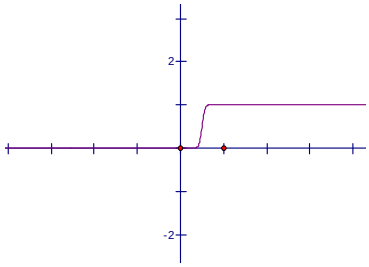
1. 考慮

$$f(x)=\left[\frac{\operatorname{sgn}(x)-\operatorname{sgn}(x-1)}{2}\right]e^{1-\frac{1}{x^2}}+\frac{\operatorname{sgn}(x-1)+1}{2}$$

$$g(x)=f(-x+1)$$

$$h(x)=\frac{f(x)}{f(x)+g(x)}$$

則 $h(x)$ 即為所求



2. 考慮

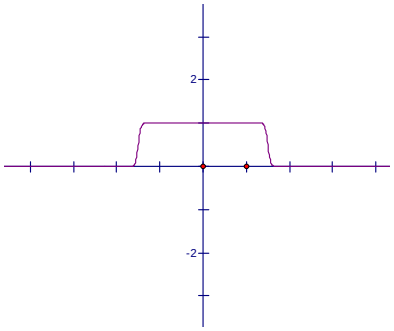
$$f(x)=\left[\frac{\operatorname{sgn}(x+2)-\operatorname{sgn}(x+1)}{2}\right]e^{1-\frac{1}{(x+2)^2}}+\frac{\operatorname{sgn}(x+1)+1}{2}$$

$$g(x)=f(-x-3)$$

$$h(x)=\frac{f(x)}{f(x)+g(x)}$$

$$q(x)=h(x)+h(-x)-1$$

則 $q(x)$ 即為所求



3. 控制點 $A_0, A_1, \ldots, A_n$,

Bezier curve 的 parameterization: $\sum_{i=0}^{n} C_i^n (1-t)^{n-i} t^i A_i, 0 \le t \le 1$

4. 控制點 $A_0, A_1, \ldots, A_n$,

Polynomial parameterization: $\sum_{i=0}^{n}\left(\prod_{j\neq i}\frac{t-t_j}{t_i-t_j}\right)A_i=\sum_{i=0}^{n}\left(\prod_{j\neq i}\frac{t-j}{i-j}\right)A_i$