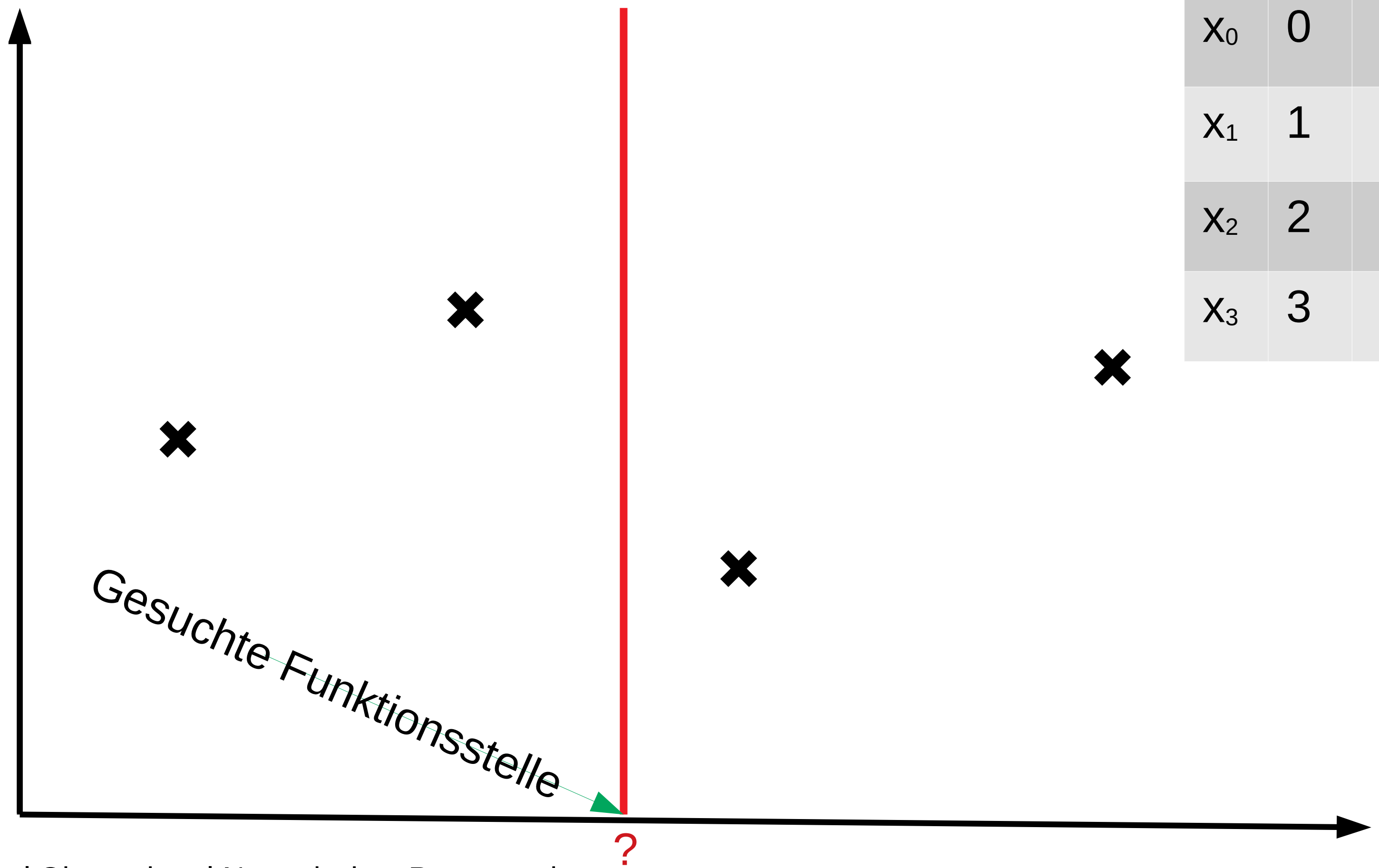
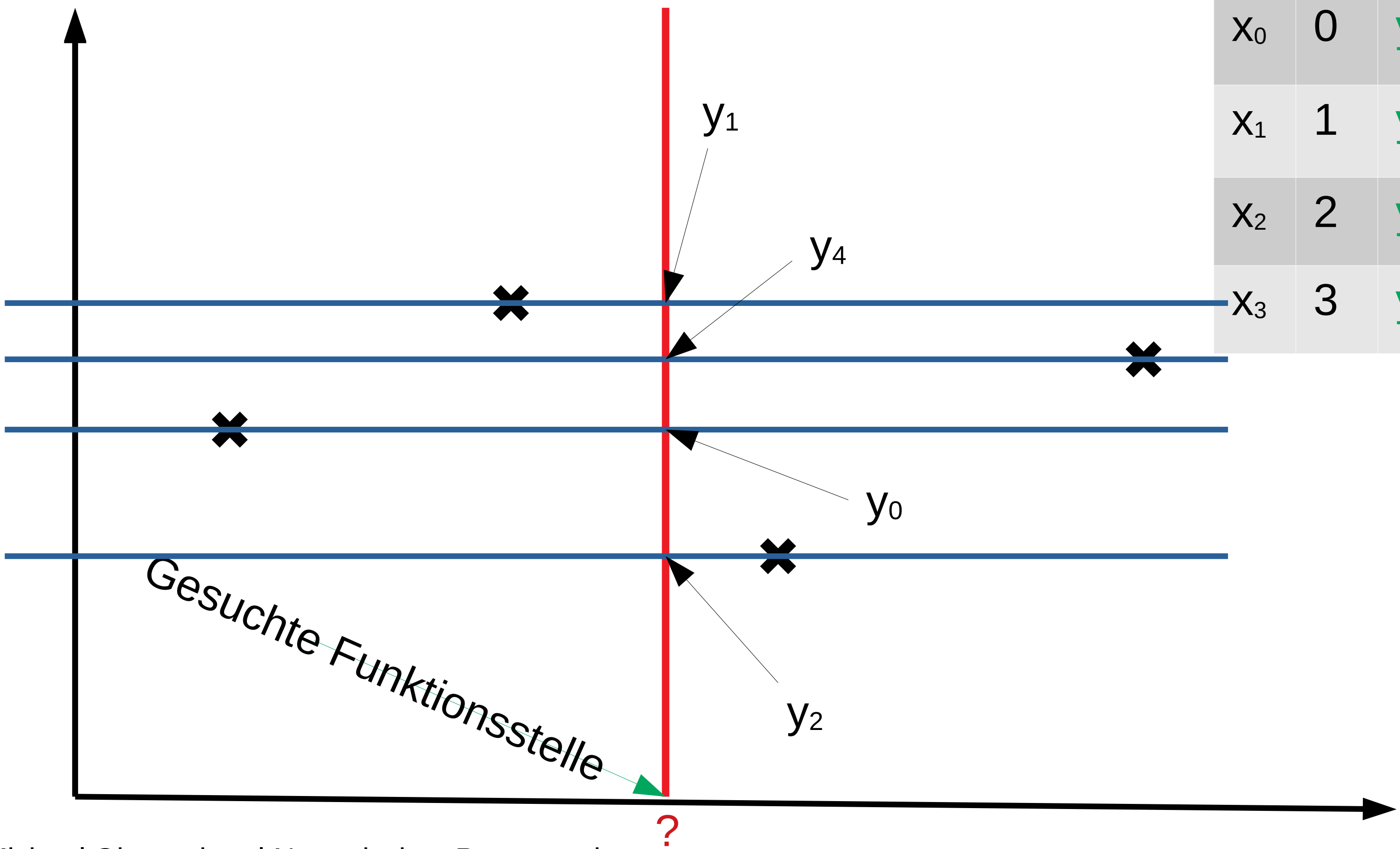
Aitken-Neville graphisch

x_i	i\k	0	1	2	3
x_0	0				
x_1	1				
x_2	2				
x_3	3				



Aitken-Neville graphisch

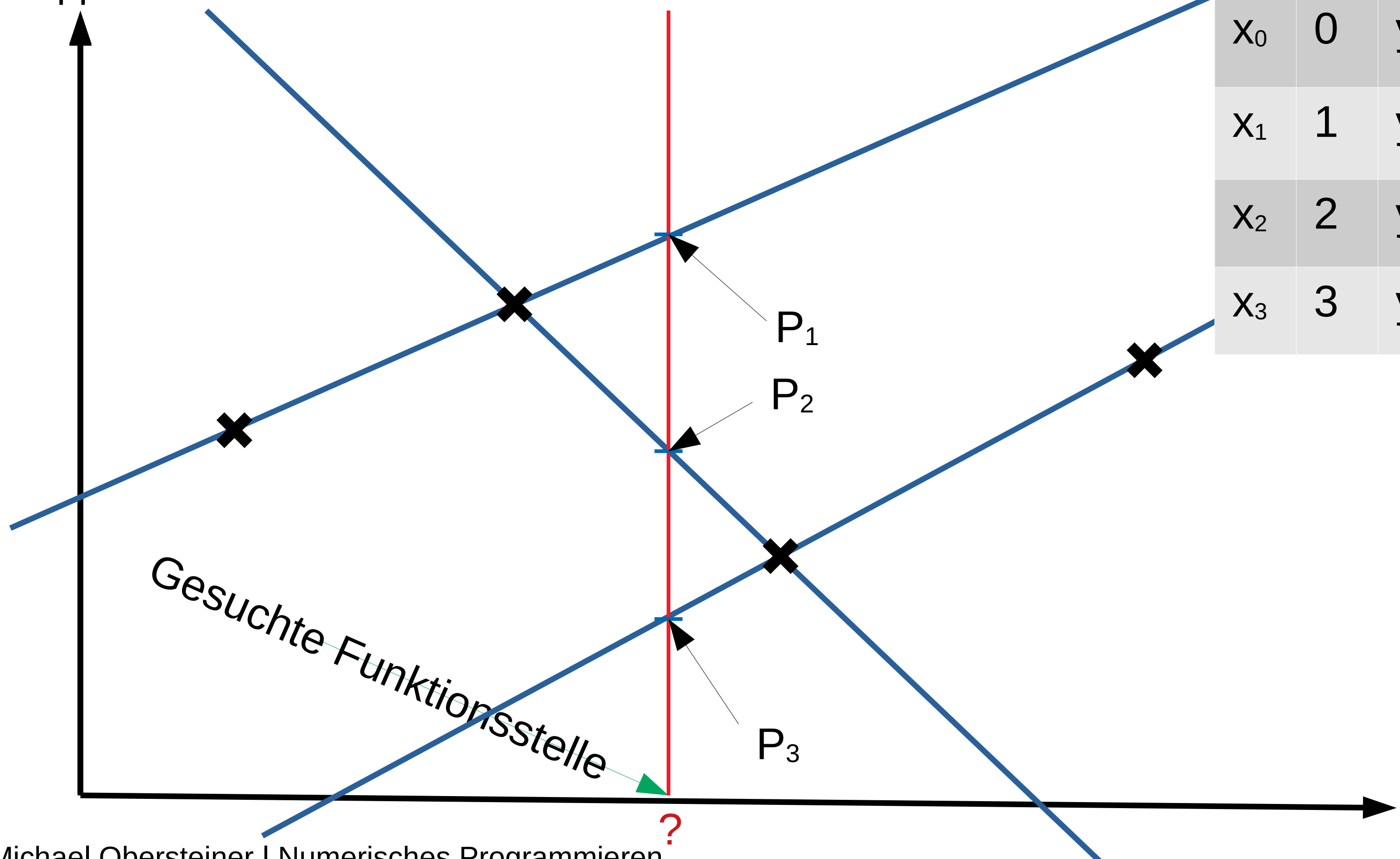


x_i	i\k	0	1	2	3
x_0	0	y_0			
x_1	1	y_1			
x_2	2	y_2			
x_3	3	y_3			

Aitken-Neville graphisch

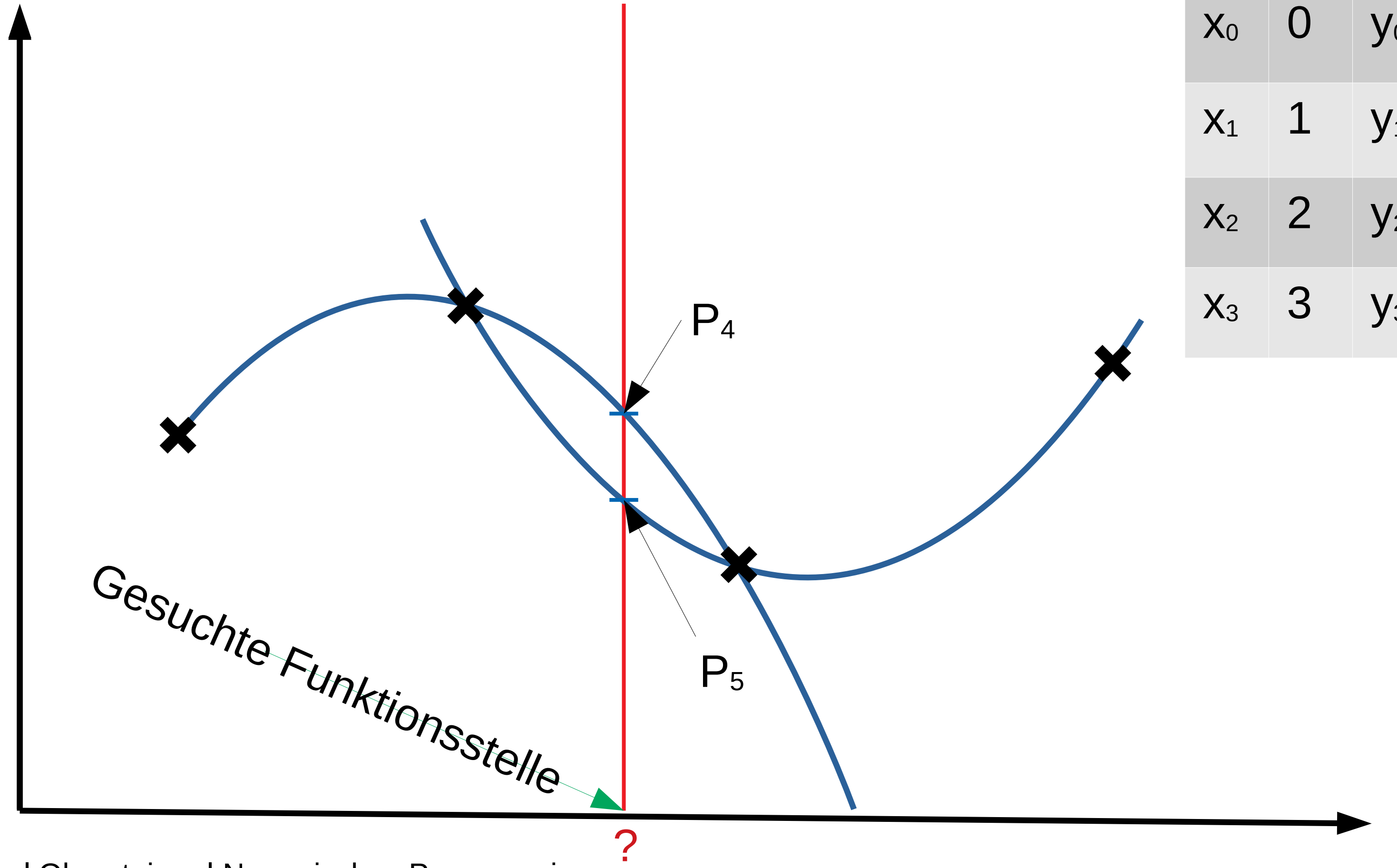
- Approximation durch Geraden

x_i	i\k	0	1	2	3
x_0	0	y_0	P_1		
x_1	1	y_1	P_2		
x_2	2	y_2	P_3		
x_3	3	y_3			



Aitken-Neville graphisch

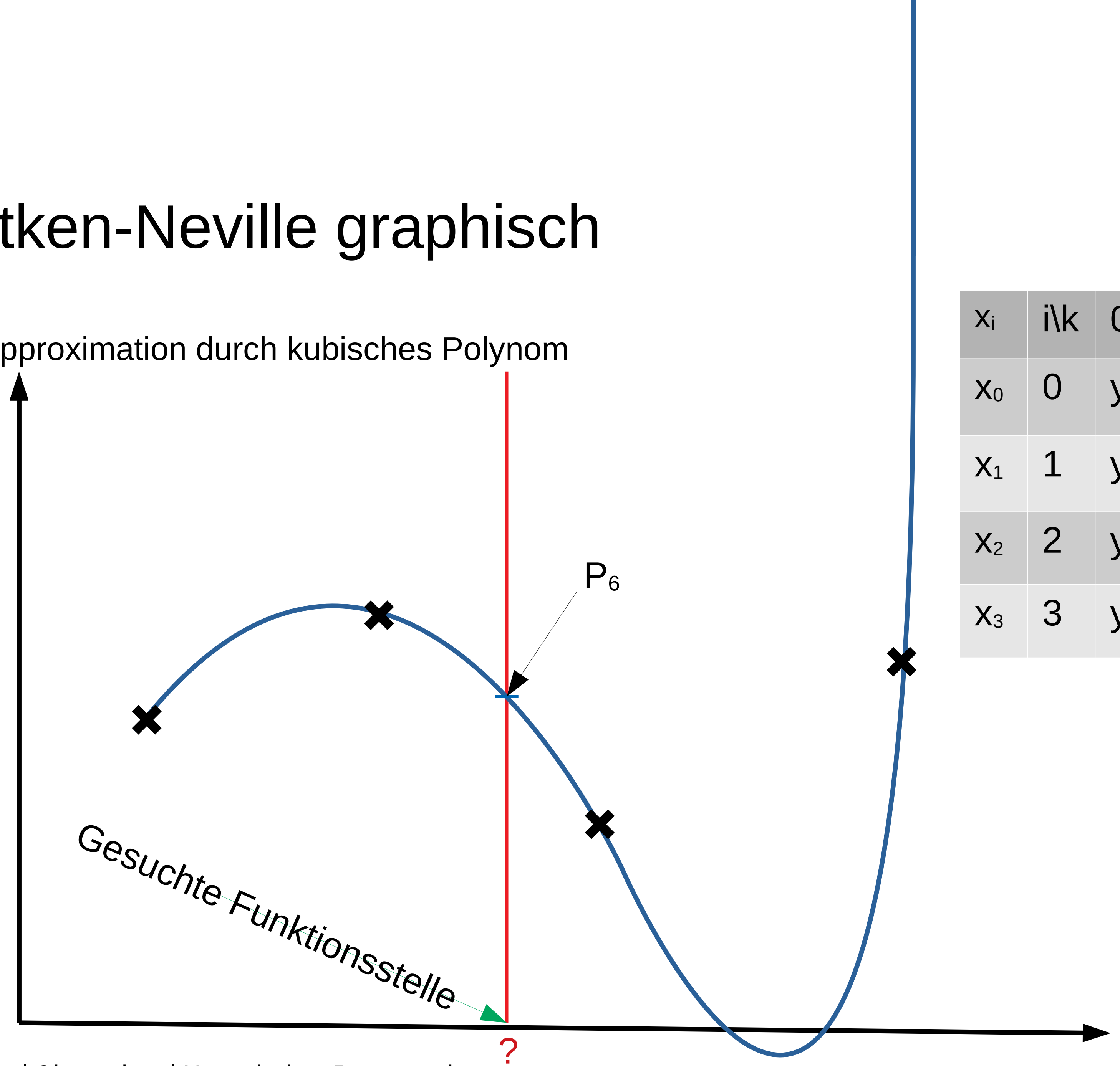
- Approximation durch Parabel



x_i	i\k	0	1	2	3
x_0	0	y_0	P_1	P_4	
x_1	1	y_1	P_2	P_5	
x_2	2	y_2	P_3		
x_3	3	y_3			

Aitken-Neville graphisch

- Approximation durch kubisches Polynom



x_i	i\k	0	1	2	3
x_0	0	y_0	P_1	P_4	P_6
x_1	1	y_1	P_2	P_5	
x_2	2	y_2	P_3		
x_3	3	y_3			

Aitken-Neville Berechnung

- Initialisierung: $p[i,0] = f(x_i) = y_i$
- Iterationsvorschrift:

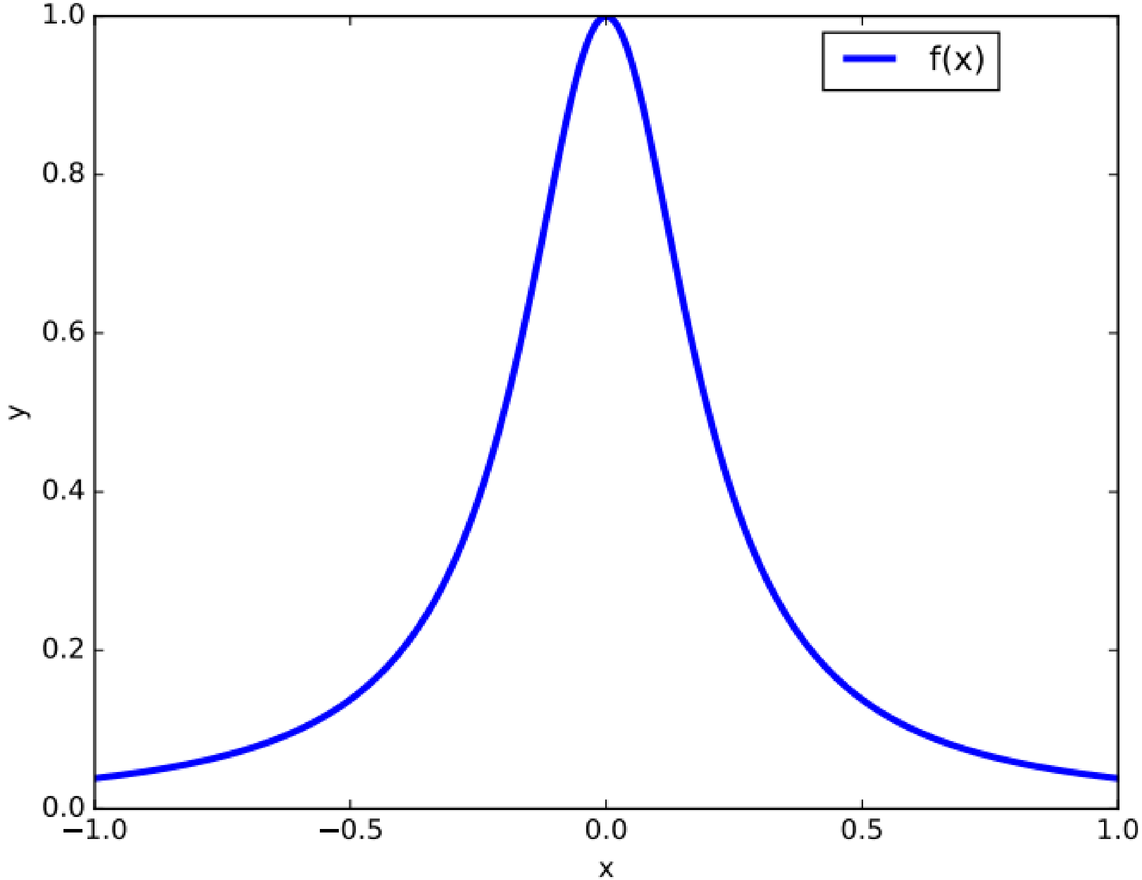
$$p[i,k] := p[i,k-1] + (x - x[i])/(x[i+k] - x[i]) * (p[i+1,k-1] - p[i,k-1])$$

- Darstellung:

$$\begin{array}{c|c|ccccccc}
x_i & i \backslash k & 0 & & 1 & & 2 & & \cdots \\ \hline
x_0 & 0 & p[0,0] = y_0 & \rightarrow & p[0,1] & \rightarrow & p[0,2] & \rightarrow & \boxed{\cdots} \\
 & & & \nearrow & & \nearrow & & & \\
x_1 & 1 & p[1,0] = y_1 & \rightarrow & p[1,1] & \rightarrow & \vdots & & \\
 & & & \nearrow & & & & & \\
x_2 & 2 & p[2,0] = y_2 & \rightarrow & \vdots & & & & \\
\vdots & \vdots & \vdots & & & & & &
\end{array}$$

- Interpolationswert an Stelle x: $p[0,n]$

Runge Effekt



Runge Effekt