

Clear[xn, s, B]

$$xn = \left\{ \frac{1}{2}, 1, 2, \frac{31}{10}, 4, \frac{42}{10} \right\}; s = 2.6;$$

B[i_, j_] :=

$$\begin{cases}
 0 & j == 0 \ \&\& \! (xn[[i+1]] \leq s \leq xn[[i+2]]) \\
 \frac{1}{xn[[i+2]]-xn[[i+1]]} & j == 0 \ \&\& \ xn[[i+1]] \leq s \leq xn[[i+2]] \\
 \frac{x-xn[[i+1]]}{xn[[i+j+2]]-xn[[i+1]]} B[i, j-1] + & j > 0 \\
 \frac{xn[[i+j+2]]-x}{xn[[i+j+2]]-xn[[i+1]]} B[i+1, j-1]
 \end{cases}$$

B[2, 0]

$$\frac{10}{11}$$

B[0, 4] // Simplify

$$\frac{25 (1236179 - 2364668x + 1625034x^2 - 460124x^3 + 45839x^4)}{14666652}$$

TableForm[Table[Table[B[i, j], {j, 0, 4-i}], {i, 0, 4}] // Expand,
 TableAlignments -> Center, TableHeadings ->
 {Table["i=" <> ToString[i], {i, 0, 4}], Table["j=" <> ToString[j], {j, 0, 4}]}]

	j=0	j=1	j=2	j=3	j=4
i=0	0	0	$\frac{4805}{3003} - \frac{3100x}{3003} + \frac{500x^2}{3003}$	$-\frac{2735}{1287} + \frac{8390x}{3003} - \frac{3260x^2}{3003} + \frac{170x^3}{1287}$	$\frac{4414925}{2095236} - \frac{14779175x}{3666663} + \frac{6770975x^2}{2444442} - \frac{410825x^3}{523809} + \frac{1145975x^4}{14666652}$
i=1	0	$\frac{310}{231} - \frac{100x}{231}$	$-\frac{1150}{693} + \frac{1040x}{693} - \frac{205x^2}{693}$	$\frac{97775}{60984} - \frac{47375x}{20328} + \frac{22175x^2}{20328} - \frac{9575x^3}{60984}$	
i=2	$\frac{10}{11}$	$-\frac{10}{11} + \frac{5x}{11}$	$\frac{100}{121} - \frac{100x}{121} + \frac{25x^2}{121}$		
i=3	0	0			
i=4	0				

TableForm[Table[Table[B[i, j], {j, 0, 4-i}] /. x -> s, {i, 0, 4}] // Expand,
 TableAlignments -> Center, TableHeadings ->
 {Table["i=" <> ToString[i], {i, 0, 3}], Table["j=" <> ToString[j], {j, 0, 4}]}]

	j=0	j=1	j=2	j=3	j=4
i=0	0	0	0.041625	0.12206	0.137838
i=1	0	0.21645	0.242713	0.158547	
i=2	$\frac{10}{11}$	0.272727	0.0743802		
i=3	0	0			
i=4	0				

B[0, 4] /. x -> s

$$0.137838$$