Interpolierende Subdivision nach Dubuc AK

$\vec{f}_0^{(0)} := (x_0, y_0)^T := (-4, 0)^T \quad \vec{f}_1^{(0)} := (x_1, y_1)^T := (-1, 3)^T$

$\vec{f}_2^{(0)} := (x_2, y_2)^T := (0, 0)^T \quad \vec{f}_3^{(0)} := (x_3, y_3)^T := (3, -21)^T$

Erste Stufe der Dubuc-Subdivision ($k := 0$)

$\vec{f}_{2i}^{(k+1)} := \vec{f}_i^{(k)}$

$\vec{f}_{2i+1}^{(k+1)} := -\frac{1}{16}\vec{f}_{i-1}^{(k)} + \frac{9}{16}\vec{f}_i^{(k)} + \frac{9}{16}\vec{f}_{i+1}^{(k)} - \frac{1}{16}\vec{f}_{i+2}^{(k)}$

Rand: $\vec{f}_{-1}^{(k)} := \vec{f}_0^{(0)} \quad \vec{f}_{n2^k+1}^{(k)} := \vec{f}_{n2^{k+1}} := \vec{f}_n^{(0)}$

$\vec{f}_0^{(1)} := \vec{f}_0^{(0)} = (-4, 0)^T$

$-\frac{4}{2} = \frac{-32}{16} \quad -\frac{9}{16} = -\frac{41}{16}$

$\vec{f}_1^{(1)} := \frac{1}{2}\vec{f}_0^{(0)} + \frac{9}{16}\vec{f}_1^{(0)} - \frac{1}{16}\vec{f}_2^{(0)} = \frac{1}{2}\begin{pmatrix}-4\\0\end{pmatrix} + \frac{9}{16}\begin{pmatrix}-1\\3\end{pmatrix}$

$-\frac{1}{16}\begin{pmatrix}0\\0\end{pmatrix} = \begin{pmatrix}-41/16\\27/16\end{pmatrix}$

$\frac{4}{16} - \frac{9}{16} - \frac{3}{16} = -\frac{8}{16}$

$\frac{27}{16} + \frac{21}{16} = \frac{48}{16} = 3$

$\vec{f}_2^{(1)} := \vec{f}_1^{(0)} = \begin{pmatrix}-1\\3\end{pmatrix}$

$\vec{f}_3^{(1)} := -\frac{1}{16}\vec{f}_0^{(0)} + \frac{9}{16}\vec{f}_1^{(0)} + \frac{9}{16}\vec{f}_2^{(0)} - \frac{1}{16}\vec{f}_3^{(0)}$

$= -\frac{1}{16}\cdot\begin{pmatrix}-4\\0\end{pmatrix} + \frac{9}{16}\begin{pmatrix}-1\\3\end{pmatrix} + \frac{9}{16}\begin{pmatrix}0\\0\end{pmatrix} - \frac{1}{16}\begin{pmatrix}3\\-21\end{pmatrix} = \begin{pmatrix}-1/2\\3\end{pmatrix}$

$\frac{21 \cdot 8}{168}$

$\vec{f}_4^{(1)} := \vec{f}_2^{(0)} = \begin{pmatrix}0\\0\end{pmatrix}$

$\frac{1}{16} + \frac{24}{16} = \frac{25}{16}$

$\frac{3}{16} - \frac{168}{16} = \frac{171}{16}$

$\vec{f}_5^{(1)} := -\frac{1}{16}\vec{f}_1^{(0)} + \frac{9}{16}\vec{f}_2^{(0)} + \frac{1}{2}\vec{f}_3^{(0)}$

$= -\frac{1}{16}\begin{pmatrix}-1\\3\end{pmatrix} + \frac{9}{16}\begin{pmatrix}0\\0\end{pmatrix} + \frac{1}{2}\begin{pmatrix}3\\-21\end{pmatrix} = \begin{pmatrix}25/16\\-171/16\end{pmatrix}$

$\vec{f}_6^{(1)} := \vec{f}_3^{(0)} = \begin{pmatrix}3\\-21\end{pmatrix}$