

Error Accumulation

integral from 0 to 1 of $(x^0)/(x+3)$ dx = 0.2877 integral from 0 to 1 of $(x^1)/(x+3)$ dx = 0.13695

$$\begin{aligned}u_n &= a * u_{n-1} + b \\ \int_0^1 \frac{x^n}{x+3} dx &= a * \int_0^1 \frac{x^{n-1}}{x+3} dx + b \\ \int_0^1 \frac{x^n - a * x^{n-1}}{x+3} dx &= b \\ \int_0^1 \frac{(x-a) * x^{n-1}}{x+3} dx &= b \\ a &= -3 \\ \int_0^1 \frac{(x+3) * x^{n-1}}{x+3} dx &= b \\ \int_0^1 x^{n-1} dx &= b \\ x^n|_0^1 &= b \\ \frac{1}{n} &= b \\ u_n &= -3u_{n-1} + \frac{1}{n}\end{aligned}$$