

Integration rationaler Funktionen mithilfe der Partialbruchzerlegung

Lösungsvorschläge

$$\boxed{1} \quad \text{a) } \int_5^9 \frac{5x-8}{x^2-2x-8} dx \approx 4,575 \quad A=3, B=2$$

$$\text{b) } \int_2^3 \frac{8-x}{x^2-x} dx \approx 1,608 \quad A=7, B=-8$$

$$\text{c) } \int_3^4 \frac{1}{x^2-4} dx \approx 0,128 \quad A=\frac{1}{4}, B=-\frac{1}{4}$$

$$\boxed{2} \quad \int_{0,5}^1 \frac{3x^4+11x^3-13x^2-40x+4}{x^3+4x^2-4x-16} dx \approx 0,848 \quad A=\frac{5}{3}, B=1, C=\frac{1}{3}$$

$$\boxed{3} \quad \int_{-1}^1 \frac{3x^3-8x^2-7x+22}{x^2-x-6} dx \approx -6,992 \quad A=4, B=2$$

$$\boxed{4} \quad \text{a) } \int_2^4 \frac{x}{x^2-1} dx \approx 0,805 \quad A=\frac{1}{2}, B=\frac{1}{2}$$

$$\text{b) } \int_2^4 \frac{x^2}{x^2-1} dx \approx 2,294 \quad A=-\frac{1}{2}, B=\frac{1}{2}$$

$$\boxed{5} \quad \int_2^3 \frac{x^3}{x^2+x-2} dx \approx 2,326 \quad A=\frac{1}{3}, B=\frac{8}{3}$$

$$\boxed{6} \quad \int_{-3}^{-1} \frac{x^2}{(x-1)^2} dx \approx 0,864 \quad \frac{x^2}{(x-1)^2} = 1 + \frac{A}{x-1} + \frac{B}{(x-1)^2} \quad \text{mit } A=2, B=-1$$

$$\boxed{7} \quad \int_1^3 \frac{2x^2-5x-3}{x^3-3x^2} dx \approx 2,864 \quad A=1, B=2, C=0$$