

Analysis 2, SS 2010, 5. Übungsblatt

26. Für zweimal stetig-differenzierbare Funktionen u, v forme man das Integral

$$\int [u(x)v''(x) - v(x)u''(x)] dx$$

um und berechne damit

$$\int \left[\frac{x+3}{x^2} + \frac{2x+18}{x^4} \right] \sin(x) dx.$$

27. Man ermittle die folgenden Integrale:

(a) $\int e^x \sin(2x) dx$

(b) $\int (\ln x)^2 dx$

(c) $\int \frac{x dx}{\sqrt{x^2 + x + 1}}$

(d) $\int \frac{dx}{\sin^2 x \cos^4 x}$

(e) $\int \frac{\ln x dx}{x(\ln^2 x - \ln x + 1)}$

(f) $\int \frac{\sinh(x)}{1 + e^{2x}} dx$

(g) $\int 2^x \coth(2^{1+x}) dx$

(h) $\int \frac{dx}{\sqrt{x-1} - \sqrt{x-2}}$

(i) $\int \frac{dx}{x(1 + \sqrt{x-1})}$

(j) $\int \frac{dx}{\sqrt{3-2x-x^2}}$

(k) $\int \frac{dx}{(1+x^2)\sqrt{1-x^2}}$

(l) $\int \frac{\arctan \sqrt{x}}{\sqrt{x}} dx$

(m) $\int \frac{\sqrt{1+x^6}}{x} dx$

(n) $\int \frac{x^2 + 1}{x\sqrt{x^4 - x^2 + 1}} dx$

(o) $\int \frac{x^3 + 2x}{x^2 + x + 4} dx$

(p) $\int \frac{dx}{1 + \sin x}$

(q) $\int \frac{e^x dx}{(1 + e^x)^2}$