

Übung: Berechne die unbestimmten Integrale

a) $\int 4x^5 dx$

b) $\int (2x^3 - 4x + 5) dx$

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

d) $\int \left(x^2 + \frac{1}{x^4} \right) dx$

e) $\int \sqrt{x} dx$

LÖSUNG

a) $\int 4x^5 dx = 4 \int x^5 dx = 4 \frac{x^6}{6} + C = \underline{\underline{\frac{2}{3} x^6 + C}}$

b) $\int (2x^3 - 4x + 5) dx = \int 2x^3 dx - \int 4x dx + \int 5 dx =$
 $= \underline{\underline{\frac{x^4}{2} - 2x^2 + 5x + C}}$

c) $\int \frac{1}{x^2} dx = \int x^{-2} dx = \frac{x^{-1}}{-1} + C = \underline{\underline{-\frac{1}{x} + C}}$

d) $\int \left(x^2 + \frac{1}{x^4} \right) dx = \int x^2 dx + \int x^{-4} dx = \frac{x^3}{3} + \frac{x^{-3}}{-3} + C =$
 $= \underline{\underline{\frac{x^3}{3} - \frac{1}{3x^3} + C}}$

e) $\int \sqrt{x} dx = \int x^{\frac{1}{2}} dx = \frac{x^{\frac{3}{2}}}{\frac{3}{2}} + C = x^{\frac{3}{2}} \cdot \frac{2}{3} + C = \sqrt{x^3} \cdot \frac{2}{3} + C = \underline{\underline{\frac{2\sqrt{x^3}}{3} + C}}$