

S 109 Nr. 2

$$\begin{aligned} \text{a) Fläche } \underline{I} &= A_2 + A_3 = \int_{-1}^1 (-0,5x^2 + 0,5) dx = \left[-\frac{1}{2} \cdot \frac{x^3}{3} + \frac{1}{2}x \right]_{-1}^1 \\ &= -\frac{1}{6} + \frac{1}{2} - \left\{ +\frac{1}{6} - \frac{1}{2} \right\} = 1 - \frac{2}{6} = 1 - \frac{1}{3} = \underline{\underline{\frac{2}{3}}} \end{aligned}$$

$$\begin{aligned} \text{Fläche } \underline{II} &= A_2 + A_3 + A_4 + A_5 = \int_{-2}^2 ((-0,5x^2 + 0,5) - (-1,5)) dx \\ &= \int_{-2}^2 (-0,5x^2 + 2) dx = \left[-\frac{1}{2} \cdot \frac{x^3}{3} + 2x \right]_{-2}^2 \\ &= -\frac{8}{6} + 4 - \left\{ +\frac{8}{6} - 4 \right\} = -\frac{16}{6} + 8 = -\frac{8}{3} + \frac{24}{3} = \underline{\underline{\frac{16}{3}}} \end{aligned}$$

$$\begin{aligned} \text{Fläche } \underline{III} &= A_3 = \int_0^1 (-0,5x^2 + 0,5) dx = \left[-\frac{1}{2} \cdot \frac{x^3}{3} + \frac{1}{2}x \right]_0^1 \\ &= -\frac{1}{6} + \frac{1}{2} = \frac{2}{6} = \underline{\underline{\frac{1}{3}}} \end{aligned}$$

$$\begin{aligned} \text{Fläche } \underline{IV} &= A_1 = \int_{-2}^{-1} |-0,5x^2 + 0,5| dx = \int_{-2}^{-1} -(-0,5x^2 + 0,5) dx \\ &= \left[+\frac{1}{2} \cdot \frac{x^3}{3} - \frac{1}{2}x \right]_{-2}^{-1} = -\frac{1}{6} + \frac{1}{2} - \left\{ -\frac{8}{6} + 1 \right\} \\ &= -\frac{1}{6} + \frac{1}{2} + \frac{8}{6} - 1 = \frac{7}{6} - \frac{1}{2} = \frac{7}{6} - \frac{3}{6} = \frac{4}{6} = \underline{\underline{\frac{2}{3}}} \end{aligned}$$