S 102 Nr. 14 Intervalladditivität

$$\int_a^b f(x)\,dx + \int_b^c f(x)\,dx = \cancel{F(b)} - F(a) + F(c) - \cancel{F(b)} =$$

$$= F(c) - F(a) = \int_a^c f(x)\,dx$$

S 102 Nr. 15

a) $$\int_{-1}^{3,3} 5x^2 - 10\int_{-1}^{3,3} \frac{1}{2}x^2\,dx = \int_{-1}^{3,3}\left(5x^2 - 10\cdot\frac{1}{2}x^2\right)dx = \int_{-1}^{3,3} 0\,dx = 0$$

b) $$\int_0^1 \left(x - 2\sqrt{x^2+4}\right)dx + 2\int_0^1 \sqrt{x^2+4} = \int_0^1 \left(x - \cancel{2\sqrt{x^2+4}} + \cancel{2\sqrt{x^2+4}}\right)dx$$

$$= \int_0^1 x\,dx = \left[\frac{x^2}{2}\right]_0^1 = \frac{1}{2} - \frac{0}{2} = \frac{1}{2}$$

c) $$\int_3^{3,7} \frac{1}{x}\,dx + \int_{3,7}^4 \frac{1}{x}\,dx = \int_3^4 \frac{1}{x}\,dx = \left[\ln(|x|)\right]_3^4 = \ln(4) - \ln(3)$$

$$\approx 0,288$$