

Definition 1: Quadratische Gleichung

$$f(x) = g(x) \quad (1)$$

$$-x^2 + 6x - 5 = -\frac{1}{3}x^2 + \frac{4}{3}x + \frac{5}{3} \quad (2)$$

$$0 = \frac{2}{3}x^2 - \frac{14}{3}x + \frac{20}{3} \quad (3)$$

$$0 = x^2 - 7x + 10 \quad (4)$$

$$0 = (x - 2)(x - 5) \quad (5)$$

$$\mathbb{L} = \{2; 5\} \quad (6)$$

$$F = \int_2^5 (g(x) - f(x)) dx \quad (7)$$

$$F = \int_2^5 \left(\frac{2}{3}x^2 - \frac{14}{3}x + \frac{20}{3} \right) dx \quad (8)$$

$$= \left[\frac{2}{9}x^3 - \frac{14}{6}x^2 + \frac{20}{3}x \right]_2^5 \quad (9)$$

$$= \underbrace{\frac{2}{9} \cdot 125 - \frac{14}{6} \cdot 25 + \frac{20}{3} \cdot 5}_{\text{obere Grenze}} - \underbrace{\left(\frac{2}{9} \cdot 8 - \frac{14}{6} \cdot 4 + \frac{20}{3} \cdot 2 \right)}_{\text{untere Grenze}} \quad (10)$$

$$= \frac{500 - 1050 + 600}{18} - \frac{32 - 168 + 240}{18} \quad (11)$$

$$= \frac{50}{18} - \frac{104}{18} \quad (12)$$

$$= -\frac{54}{18} = -3 \quad (13)$$

$$f(x) = -x^2 + 6x - 5 = -(x^2 - 6x + 5) \quad (14)$$