

7.1

Zur Zeichnung:

$$f_1: y = x^2 - 4x + 2$$

$$f_1: y = x^2 - 4x + 2^2 - 2^2 + 2 \quad \text{NP}$$

$$f_1: y = (x-2)^2 - 2$$

$$S_1 (2 | -2)$$

$$f_2: y = -x^2 - 4x + 2$$

$$f_2: y = -(x^2 + 4x - 2)$$

$$f_2: y = -(x^2 + 4x + 2^2 - 2^2 - 2) \quad \text{NP, nach unten}$$

$$f_2: y = -(x+2)^2 + 6$$

$$S_2 (-2 | 6)$$

7.2

$$p_1 \cap p_2$$

$$x^2 - 4x + 2 = -x^2 - 4x + 2$$

$$x^2 - 4x + 2 + x^2 + 4x - 2 = 0 \quad \mathbb{L} = \{0\}$$

$$2x^2 = 0$$

$$x = 0$$

Berührungspunkt: B(0|2)

7.3

$$p_1 \cap g$$

$$x^2 - 4x + 2 = -4x + 2$$

$$x^2 - 4x + 2 + 4x - 2 = 0 \quad \mathbb{L} = \{0\}$$

$$x^2 = 0$$

$$x_1 = x_2 = 0$$

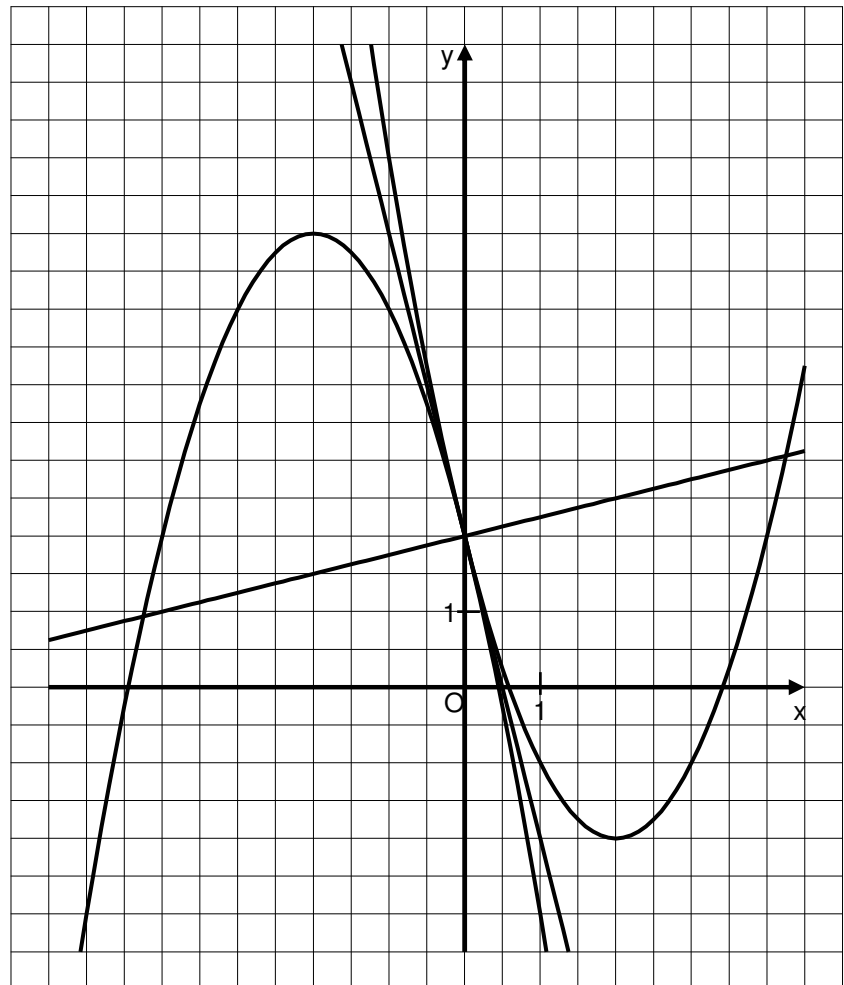
Berührungspunkt: B(0|2)

$$p_2 \cap g$$

$$-x^2 - 4x + 2 = -4x + 2$$

$$-x^2 = 0 \quad \mathbb{L} = \{0\}$$

$$x_1 = x_2 = 0$$

Berührungspunkt: B(0|2)

7.4

$$m_g = -4 \Rightarrow m_h = 0,25$$

$$m_h \text{ und B in Punktsteigungsform: } \Rightarrow h: \begin{aligned} y &= 0,25 \cdot (x - 0) + 2 \\ y &= 0,25x + 2 \end{aligned}$$

$p_1 \cap h$

$$x^2 - 4x + 2 = 0,25x + 2$$

$$x^2 - 4x + 2 - 0,25x - 2 = 0$$

$$x^2 - 4,25x = 0$$

$$a = 1; b = -4,25; c = 0 \quad \mathbb{L} = \{0; 4,25\}$$

$$x_{1/2} = \frac{4,25 \pm \sqrt{(-4,25)^2 - 4 \cdot 1 \cdot 0}}{2 \cdot 1}$$

$$x_{1/2} = \frac{4,25 \pm 4,25}{2}$$

$$x_1 = 4,25 \vee x_2 = 0$$

Schnittpunkt: B (0 | 2), A (4,25 | 3,06)

$p_2 \cap h$

$$-x^2 - 4x + 2 = 0,25x + 2$$

$$-x^2 - 4x + 2 - 0,25x - 2 = 0$$

$$-x^2 - 4,25x = 0 \quad \mathbb{L} = \{-4,25; 0\}$$

$$-x \cdot (x + 4,25) = 0$$

$$x_1 = -4,25 \vee x_2 = 0$$

Schnittpunkt: C (-4,25 | 0,94), B (0 | 2)

$$\overrightarrow{AB} = \begin{pmatrix} 0 - 4,25 \\ 2 - 3,06 \end{pmatrix} = \begin{pmatrix} -4,25 \\ -1,06 \end{pmatrix}; \overrightarrow{AS_1} = \begin{pmatrix} 2 - 4,25 \\ -2 - 3,06 \end{pmatrix} = \begin{pmatrix} -2,25 \\ -5,06 \end{pmatrix}$$

$$A_{\Delta ABS_1} = \frac{1}{2} \cdot \begin{vmatrix} -4,25 & -2,25 \\ -1,06 & -5,06 \end{vmatrix}$$

$$A_{\Delta ABS_1} = \frac{1}{2} \cdot ((-4,25) \cdot (-5,06) - (-2,25) \cdot (-1,06))$$

$$A_{\Delta ABS_1} = 9,56 \text{ FE}$$

$$\overrightarrow{BS_2} = \begin{pmatrix} -2 - 0 \\ 6 - 2 \end{pmatrix} = \begin{pmatrix} -2 \\ 4 \end{pmatrix}; \overrightarrow{BC} = \begin{pmatrix} -4,25 - 0 \\ 0,94 - 2 \end{pmatrix} = \begin{pmatrix} -4,25 \\ -1,06 \end{pmatrix}$$

$$A_{\Delta BS_2C} = \frac{1}{2} \cdot \begin{vmatrix} -2 & -4,25 \\ 4 & -1,06 \end{vmatrix}$$

$$A_{\Delta BS_2C} = \frac{1}{2} \cdot ((-2) \cdot (-1,06) - (-4,25) \cdot 4)$$

$$A_{\Delta BS_2C} = 9,56 \text{ FE}$$
