

Lösung 1. SA Analysis Gruppe A

1.1. $p(x) = ax^2 + bx + c$

$A(0|-1) \quad -1 = c \quad \checkmark$

$B(1|0,5) \quad 0,5 = a + b - 1 \quad \checkmark \quad | \cdot 4$

$C(-4|3) \quad 3 = 16a - 4b - 1 \quad \checkmark$

$$\begin{array}{l} 6 = 4a + 4b \\ 4 = 16a - 4b \end{array} \quad \begin{array}{l} + \\ - \end{array} \quad 10 = 20a \Rightarrow a = \frac{1}{2} \quad \checkmark$$

a eingesetzt $4 = 16 \cdot \frac{1}{2} - 4b$

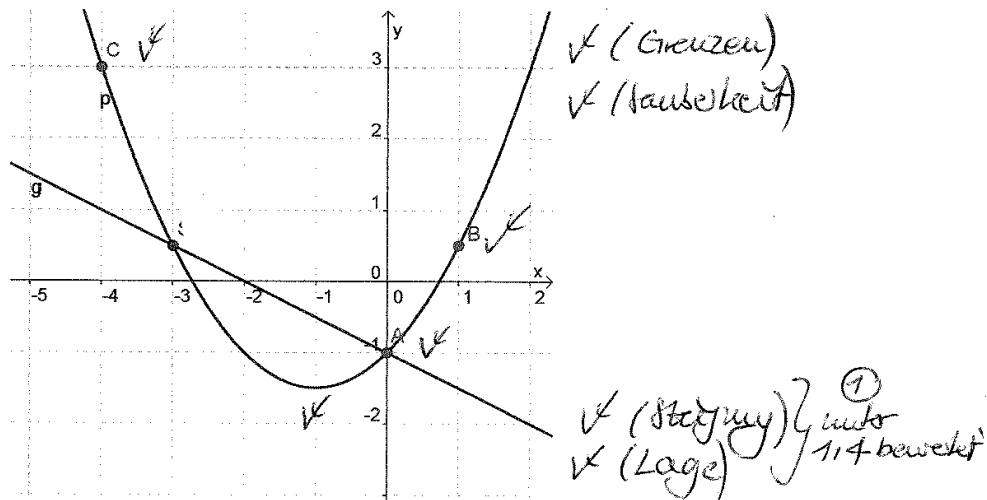
$4b = 8 - 4 \Rightarrow b = 1 \quad \checkmark$

(5)

$p(x) = \frac{1}{2}x^2 + x - 1 \quad \checkmark$

1.2. $x_s = \frac{-1}{2 \cdot \frac{1}{2}} = -1 \quad \checkmark \quad y_s = \frac{1}{2} \cdot (-1)^2 - 1 - 1 = -1,5 \quad \checkmark \quad S(-1|-1,5) \quad \textcircled{2}$

1.3.



(3)

1.4. $m_{BC} = \frac{3 - 0,5}{-4 - 1} = \frac{2,5}{-5} = -\frac{1}{2} = m_g \quad \checkmark$

A in g eingesetzt: $t = -1 \quad \checkmark$

$g(x) = -\frac{1}{2}x - 1 \quad \checkmark$

1.5. $\frac{1}{2}x^2 + x - 1 = -\frac{1}{2}x - 1 \quad \checkmark$

$\frac{1}{2}x^2 + \frac{3}{2}x = 0 \quad \checkmark$

$x(\frac{1}{2}x + \frac{3}{2}) = 0 \quad \checkmark$

Schnittpunkte

$x_1 = 0 \quad \checkmark \quad x_1 = -1 \quad \checkmark \quad S_1(0|-1) \quad \checkmark$

$x_2 = -\frac{\frac{3}{2}}{\frac{1}{2}} = -3 \quad \checkmark$

$y_2 = -\frac{1}{2}(-3) - 1 = 0,5 \quad \checkmark \quad S_2(-3|0,5) \quad \checkmark$

(3) + (1)
siehe Zeichnung

(5)

$$2.0 \quad p(x) = x^2 + kx + 4$$

$$2.1.1 \quad x_0 = \frac{-k}{2} \checkmark \quad y_0 = \left(-\frac{k}{2}\right)^2 + k\left(-\frac{k}{2}\right) + 4 \checkmark$$

$$= \frac{k^2}{4} - \frac{k^2}{2} + 4 = -\frac{k^2}{4} + 4 \checkmark$$

$$\mathcal{J}\left(-\frac{k}{2} \mid -\frac{k^2}{4} + 4\right) \checkmark$$

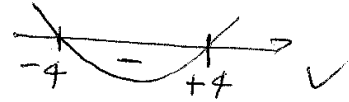
(3)

2.2 keine Nullstellen $\Leftrightarrow D < 0$

$$D = k^2 - 4 \cdot 4$$

$$k^2 - 16 < 0 \checkmark$$

$$k_{1/2} = \frac{0 \pm \sqrt{4 \cdot 16}}{2} \checkmark = \frac{\pm 8}{2} = \pm 4 \checkmark$$



$$D < 0 \text{ f\"ur } -4 < k < +4 \checkmark$$

(5)

3.0 $x_1 = -1$ durch Probieren $\checkmark$

$$(x^3 + 2x^2 - 5x - 6) : (x + 1) = x^2 + x - 6 \checkmark$$

$$\begin{array}{r} x^3 + 2x^2 - 5x - 6 \\ -(x^3 + x^2) \end{array}$$

$$\begin{array}{r} x^2 - 5x \\ -(x^2 + x) \end{array}$$

$$6x - 6$$

$$6x - 6$$

$$0$$

$$x_{2/3} = \frac{-1 \pm \sqrt{1^2 + 4 \cdot 6}}{2} \checkmark = \frac{-1 \pm \sqrt{25}}{2}$$

$$x_2 = \frac{-1 + 5}{2} = 2 \checkmark$$

$$x_3 = \frac{-1 - 5}{2} = -3 \checkmark$$

(5)