

Musterlös 2. SA Vorlesung

$$\begin{array}{l} \text{1) I } 2a - 8b = -8 \Rightarrow a = 4 \\ \text{1.1 II } 3a + 4b = 20 \\ \hline 2\text{II} - 3\text{I} = \text{II}' \quad 32b = 64 \checkmark \Rightarrow b = 2 \checkmark \end{array}$$

$$\Rightarrow \mathbb{L} = \{(4|2)\} \quad (4 \text{ BE})$$

$$\begin{array}{l} \text{1.2) I } \frac{1}{2}x + \frac{3}{4}y = 6 \\ \text{II } -2x - \frac{1}{3}y = 5 \\ \hline \end{array}$$

$$4\text{I} + \text{II} \quad 0 = 29 \quad \checkmark \Rightarrow \mathbb{L} = \{\} \quad (3 \text{ BE})$$

$$2) u(0|0), s(5|-2)$$

$$f(x) = a(x - x_s)^2 + y_s$$

$$0 = a(0 - 5)^2 - 2 \checkmark$$

$$0 = 25a - 2 \checkmark$$

$$a = \frac{2}{25} \checkmark \Rightarrow f(x) = \frac{2}{25}(x - 5)^2 - 2 \checkmark$$

(4 BE)

$$3) f(x) = \frac{1}{2}x^2 - 2x, g(x) = -\frac{1}{2}x + 2$$

$$\underline{3.1)} x(\frac{1}{2}x - 2) = 0 \checkmark$$

$$x_1 = 0 \checkmark, \frac{1}{2}x - 2 = 0$$

$$x_2 = 4 \checkmark$$

(3 BE)

$$\underline{3.2)} x_s = \frac{0+4}{2} = 2 \checkmark, f(2) = -2 \checkmark \Rightarrow s(2|-2) \checkmark$$

(3 BE)

$$\underline{3.3)} \frac{1}{2}x^2 - 2x = -\frac{1}{2}x + 2 \checkmark$$

$$\frac{1}{2}x^2 - \frac{3}{2}x - 2 = 0$$

$$\frac{1}{2}(x^2 - 3x - 4) = 0 \checkmark$$

$$\Delta = 9 + 16 = 25 \checkmark$$

$$x_{1/2} = \frac{3 \pm 5}{2}; x_1 = 4 \checkmark, x_2 = -1 \checkmark$$

$$g(4) = 0 \checkmark \Rightarrow SP_1(4|0) \checkmark$$

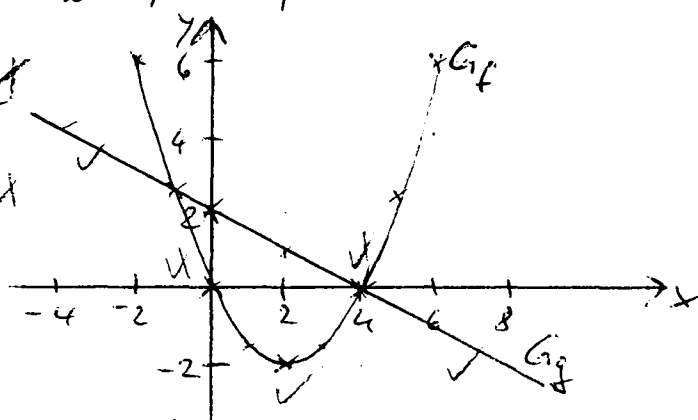
$$g(-1) = 2,5 \checkmark \Rightarrow SP_2(-1|2,5) \checkmark$$

(5 BE)

$$\underline{3.4)}$$

$$f(-1) = 2,5 \checkmark$$

$$f(5) = 2,5 \checkmark$$



(5 BE)

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

$$k(x) = \frac{4}{3}x + t$$

$$-\frac{1}{6}x^2 + x - \frac{1}{2} = \frac{4}{3}x + t \quad \checkmark$$

$$-\frac{1}{6}x^2 - \frac{1}{3}x - \frac{1}{2} - t = 0$$

$$D=0: \quad \frac{1}{9} + 4 \cdot \frac{1}{6} \left(-\frac{1}{2} - t\right) = 0 \quad \checkmark$$

$$\frac{1}{9} - \frac{1}{3} - \frac{2}{3}t = 0$$

$$t = -\frac{2}{9} \cdot \frac{3}{2} = -\frac{1}{3} \quad \checkmark$$

$$x_{1,2} = \frac{\frac{1}{3} \pm 0}{-\frac{1}{6} \pm 2} = -1 \quad \checkmark; \quad h(-1) = -\frac{16}{6} + 1 = -\frac{5}{3} \quad \checkmark$$

$$\Rightarrow \mathcal{S}(-1 | -\frac{5}{3}) \quad \checkmark$$

(6 P)

$$5.) \quad h(t) = 25t - 4,9t^2$$

$$5.1) \quad t_s = \frac{-25}{-4,9 \cdot 2} = \frac{125}{49} \approx 2,55 \quad \checkmark; \quad h(t) = 31,89 \quad \checkmark$$

Größte Höhe ist 31,89m. Die Höhe wird nach 2,55s erreicht. $\checkmark$

(3 P)

$$5.2) \quad 25t - 4,9t^2 = 0$$

$$t(25 - 4,9t) = 0 \quad \checkmark$$

$$t_1 = 0; \quad 25 - 4,9t = 0$$

$$t = \frac{25}{4,9} = 5,1 \quad \checkmark$$

Nach 5,1s ist die Rakete wieder am Boden. $\checkmark$

(3 P)