Musterlösung 1.SA – M; 2.HJ; 11.KL

Teil A (ohne Hilfsmittel)

1) $a \to f_3$ ✓ $\quad c \to f_1$ ✓
$b \to f_8$ ✓ $\quad d \to f_5$ ✓ (4 BE)

2) 2.1 richtig ✓
2.2 falsch ✓; z.B. $y = (x-3)^2 - 1$ hat zwei Nst ✓
2.3 richtig ✓ (4 BE)

Teil B (mit Hilfsmittel)

1.1 $H(0|0) \Rightarrow c = 0$ ✗

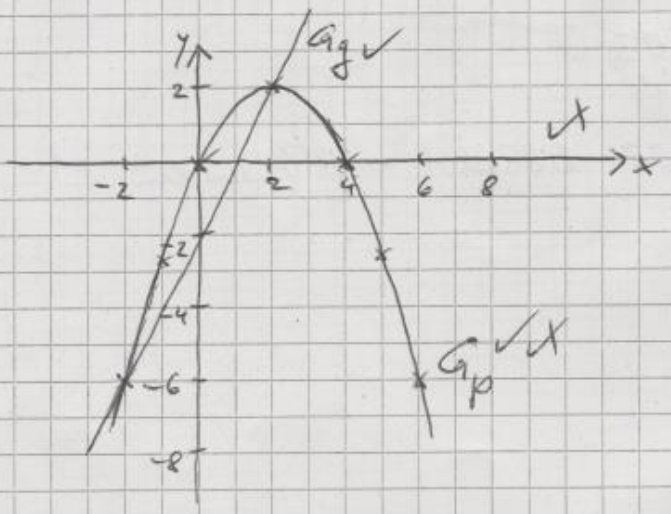
I $\quad a + b = 1{,}5 \quad | \cdot 5$ ✗ $\quad -\frac{1}{2} + b = \frac{3}{2}$
II $\quad 25a + 5b = -2{,}5$ ✓ ✗ $\quad b = 2$ ✗
$20a = -10$ ✓
$a = -\frac{1}{2}$ ✗ in I $\quad \Rightarrow p(x) = -\frac{1}{2}x^2 + 2x$ ✗ (4 BE)

1.2 Nst: $-\frac{1}{2}x \overset{✗}{(}x - 4) = 0$ ✗
$x_1 = 0$ ✗, $x_2 = 4$ ✗ (2 BE)

1.3 $x_S = \frac{0+4}{2} = 2$ ✓, $p(2) = 2$ ✗ $\Rightarrow S(2|2)$ ✗ (2 BE)

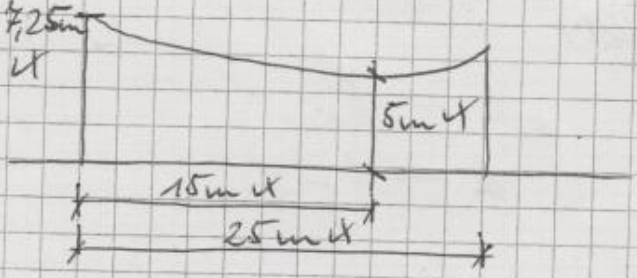
1.4 $-\frac{1}{2}x^2 + 2x \overset{✗}{=} 2x - 2$
$-\frac{1}{2}x^2 = -2$
$x^2 = 4$ ✗
$x_1 = -2$ ✗, $x_2 = 2$ ✗
$p(-2) = -6$ ✗ $\Rightarrow SP_1(-2|-6)$ ✗
$p(2) = 2 \Rightarrow SP_2(2|2)$ ✗ (4 BE)

1.5



(3 BE)

2.1



(2BE)

2.2 $S(15|5)$, $P(0|7,25)$

$7,25 = a(0-15)^2 + 5$ ✓✓

$2,25 = 225a$ ✓

$a = 0,01$ ✓ $\Rightarrow f(x) = 0,01(x-15)^2 + 5$ ✓ (4BE)

2.3 $f(25) = 6\,m$ ✓ (1BE)

3.1 $V = V_{Hk} + V_{Ke}$

$V = \frac{2}{3}\pi \cdot r^3 + \frac{1}{3} \cdot \pi \cdot r^2 \cdot 3r$ ✓ ✓ ✓

$V = \frac{2}{3}\pi r^3 + \pi r^3$ ✓

$V = \frac{5}{3}\pi r^3$ ✓ (4BE)

3.2 $O_{Hk} = 2 \cdot r^2 \cdot \pi = 2 \cdot 5^2 \cdot \pi$ ✓ $= 50\pi$ ✓ $= 157,08$

$M_{Ke} = r \cdot \pi \cdot m = 5 \cdot \pi \cdot 15,81$ ✓ $= 248,34$ ✓

$m^2 = 5^2 + 15^2$ ✓

$m^2 = 250$ |$\sqrt{\ }$

$m = 15,81$ ✓

$O = 157,08 + 248,34 = 405,42\ cm^2$ ✓ (5BE)