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1) a) $2x+4=0$ $x_1=-2$ $x_2=1$ $L=\{-2, 1\}$
 b) $x(3x-1)=0$ $x_1=0$ $x_2=\frac{1}{3}$ $L=\{0, \frac{1}{3}\}$

4

2.1) $f(x) = -\frac{1}{2}(x^2 - 2x - 3)$ $T(0|1,5)$

$$x_{1,2} = \frac{2 \pm \sqrt{4 - 4 \cdot 1 \cdot (-3)}}{2} = \frac{2 \pm 4}{2}$$
 $x_1 = -1$ $x_2 = 3$

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2.2) $x_S = -\frac{b}{2a} = -\frac{1}{-1} = 1$ $S(1|2)$ $W =]-\infty; 2]$

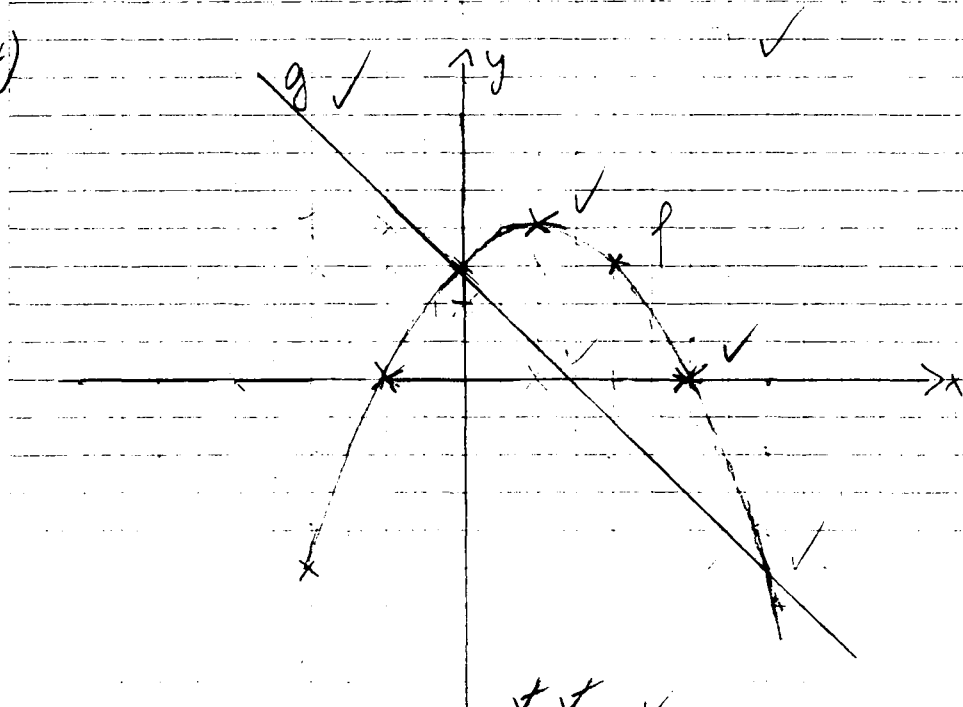
3

2.3) $S_1(0|1,5)$ $S_2(4|-2,5)$

$$m = \frac{-2,5 - 1,5}{4 - 0} = -1$$
 $y = -x + 1,5$

2.4)

4



2

2.5) $g(x) < f(x)$ für $x \in]0; 4[$

2.6) $-0,5x^2 + x - 1,5 = -3x + 9,5$

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$-0,5x^2 + 4x - 8 = 0$

$$x_{1,2} = \frac{-4 \pm \sqrt{16 - 4 \cdot (-0,5) \cdot (-8)}}{-2 \cdot (-0,5)}$$

$D=0 \Rightarrow$ Berührungspunkt

$x_S = \frac{4}{1} = 4$ $y_S = -2,5$ $S(4|-2,5)$

$$3.1) f(x) = a(x-4) \cdot x \quad \checkmark \checkmark$$

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$$2,5 = a(-1-4)(-1) \quad \checkmark$$

$$2,5 = 5a$$

$$a = \frac{1}{2} \quad \checkmark$$

$$f(x) = \frac{1}{2}(x-4) \cdot x \quad \checkmark \left[= \frac{1}{2}(x^2 - 4x) = \frac{1}{2}x^2 - 2x \right. \\ \left. = \frac{1}{2}(x-2)^2 - 2 \right]$$

$$4) p(x) = 0,5x^2 - 3,125$$

4

$$4.1) p(2) = 0,5 \cdot 4 - 3,125 = -1,125 \quad \checkmark \checkmark \quad h = 1,125 \quad \checkmark$$

$$A = 2 \cdot 2 \cdot 1,125 = 4,5 \quad \checkmark$$

$$4.2) S(0 | -3,125) \quad \checkmark$$

Abstand B:

$$3,125 - 1,125 = 2 \quad \checkmark$$

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$$\text{Nst: } 0,5x^2 - 3,125 = 0 \quad \checkmark \quad x_{1/2} = \pm 2,5 \quad \checkmark$$

Abstand zu A:

$$2,5 - 2 = 0,5 \quad \checkmark$$

$$5) u = 4r + 2b + 2\pi r \quad \checkmark \\ = (4 + 2\pi)r + 2b$$

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$$r = 0,5 : \quad \begin{aligned} (4 + 2\pi) \cdot 0,5 + 2b &= 10 \quad \checkmark \\ 2 + \pi + 2b &= 10 \quad \checkmark \end{aligned} \quad b = \frac{8 - \pi}{2} \approx 2,43 \quad \checkmark$$

$$A = b \cdot 4r + \pi \cdot r^2 \quad \checkmark$$

$$2,43 \cdot 2 + \frac{1}{4}\pi \approx 5,65 \quad \checkmark$$

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