

## Lineare und affine Funktionen

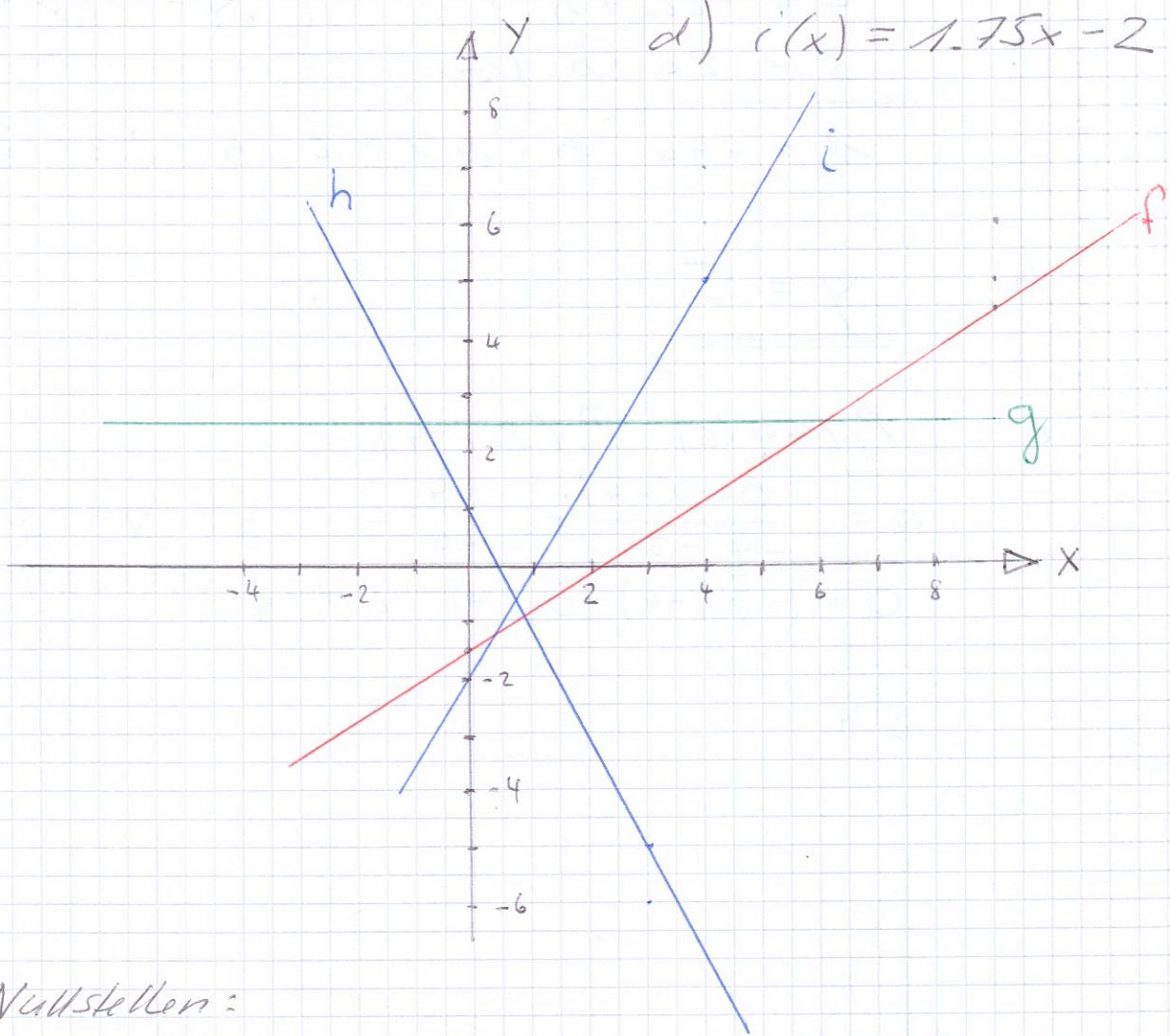
(1)

a)  $f(x) = \frac{2}{3}x - \frac{3}{2}$

b)  $g(x) = 2.5$

c)  $h(x) = (x-1)^2 - x^2$   
 $= -2x + 1$

d)  $i(x) = 1.75x - 2$



Nullstellen:

a)  $\frac{2}{3}x - \frac{3}{2} = 0$

$$\frac{2}{3}x = \frac{3}{2} \quad | \cdot \frac{3}{2}$$

$$x = \frac{9}{4} = 2.25$$

c)  $-2x + 1 = 0$

$$\begin{aligned} 2x &= 1 \\ x &= \frac{1}{2} \end{aligned}$$

d)  $1.75x - 2 = 0$

$$\begin{aligned} 1.75x &= 2 \\ \frac{7}{4}x &= 2 \quad | \cdot \frac{4}{7} \\ x &= \frac{8}{7} \end{aligned}$$

b) keine NST

(2)  $f: P_1(0/-3), P_2(3/3)$

$$\left. \begin{array}{l} -3 = a \cdot 0 + b \\ 3 = a \cdot 3 + b \\ \hline 6 = 3a \Rightarrow a = 2, b = -3 \end{array} \right\} \quad \begin{aligned} & y = 2x - 3 \\ & \hline \end{aligned}$$

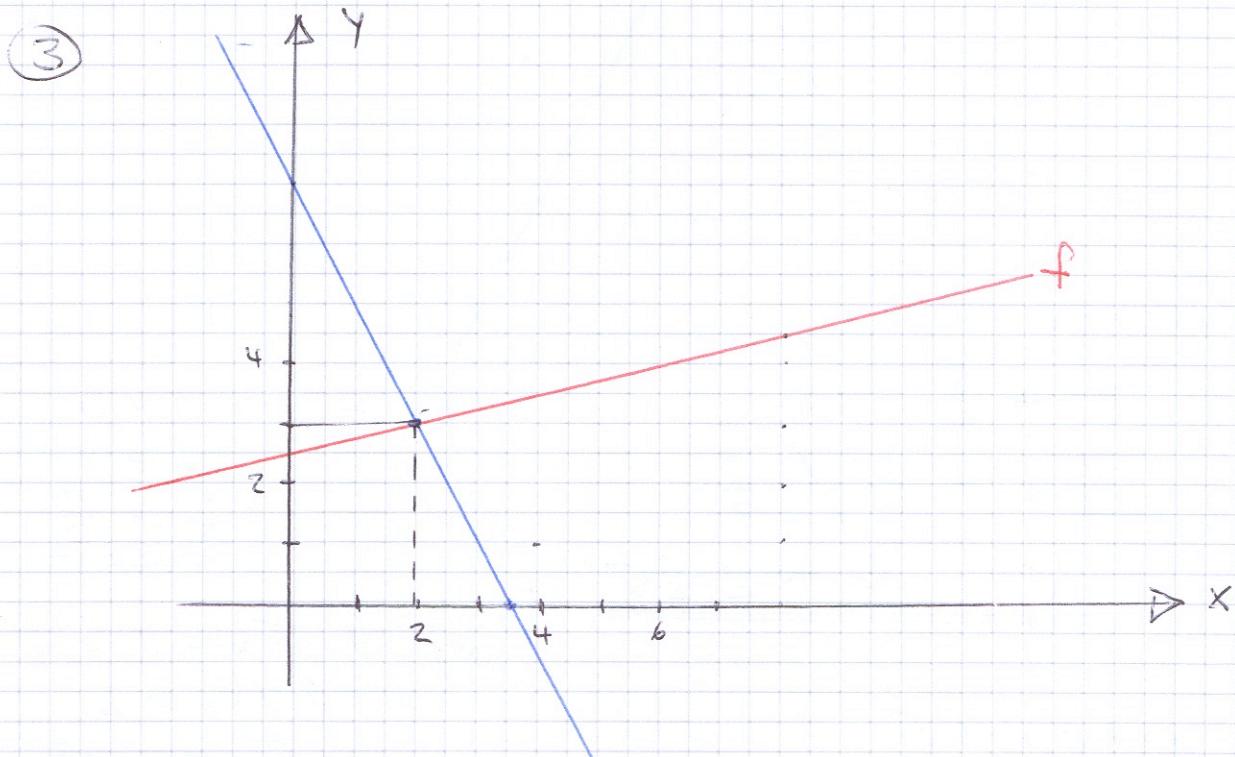
$g: P_1(-2/4), P_2(2/3)$

$$\left. \begin{array}{l} 4 = -2a + b \\ 3 = 2a + b \\ \hline 1 = -4a \Rightarrow a = -\frac{1}{4}, b = 3.5 = \frac{7}{2} \end{array} \right\} \quad \begin{aligned} & y = -\frac{1}{4}x + \frac{7}{2} \\ & \hline \end{aligned}$$

$h: \underline{\underline{y = 5}}$

i:  $P_1(-4/0), P_2(2/4)$

$$\left. \begin{array}{l} a = \frac{0 - (-4)}{-4 - 2} = \frac{4}{-6} = -\frac{2}{3} \\ 0 = -\frac{2}{3}(-4) + b \Rightarrow b = -\frac{8}{3} \end{array} \right\} \quad \begin{aligned} & y = -\frac{2}{3}x - \frac{8}{3} \\ & \hline \end{aligned}$$



(4)  $A(3.5/4), B(19/13), C(14/10)$

$$(AB): \begin{array}{r} 4 = 3.5a + b \\ 13 = 19a + b \\ \hline 9 = 15.5a \\ a = \frac{9}{15.5} = \frac{18}{31} \end{array}$$

$$\textcircled{3} \quad f: y = \frac{1}{4}x + \frac{5}{2} \quad g = (AB), A(1|5), B(3|1)$$

$$a = \frac{5-1}{1-3} = \frac{4}{-2} = -2$$

$$1 = (-2) \cdot 3 + b$$

$$7 = b$$

$$\underline{\underline{g: y = -2x + 7}}$$

$$\frac{1}{4}x + \frac{5}{2} = -2x + 7 \quad | \cdot 4$$

$$x + 10 = -8x + 28$$

$$9x = 18 \Rightarrow x = 2, y = 3$$

$$\underline{\underline{S(2|3)}}$$

$$\textcircled{4} \quad A(3.5|4), B(19|13), C(14|10)$$

$$\text{Steigung (AB)}: a_1 = \frac{19-13}{19-3.5} = \frac{6}{15.5} = \frac{18}{31}$$

$$\text{Steigung (BC)}: a_2 = \frac{13-10}{19-14} = \frac{3}{5} = -\frac{3}{5}$$

$a_1 \neq a_2$ , nicht auf Gerade

$\Rightarrow A, B \text{ und } C$  liegen nicht auf Linie

$$\textcircled{5} \quad \underline{\underline{2 \cdot 50 = 50a + b \quad 4 \cdot 45 = 180a + b}}$$

$$\cancel{4 \cdot 45 = 180a + b}$$

$$\cancel{2 \cdot 5 =}$$

$$2 \cdot 5 = 50a + b$$

$$\cancel{4 \cdot 45 = 180a + b}$$

$$\underline{\underline{1.95 = 130a}} \Rightarrow a = 0.015 \text{ Fr./Stunde}$$

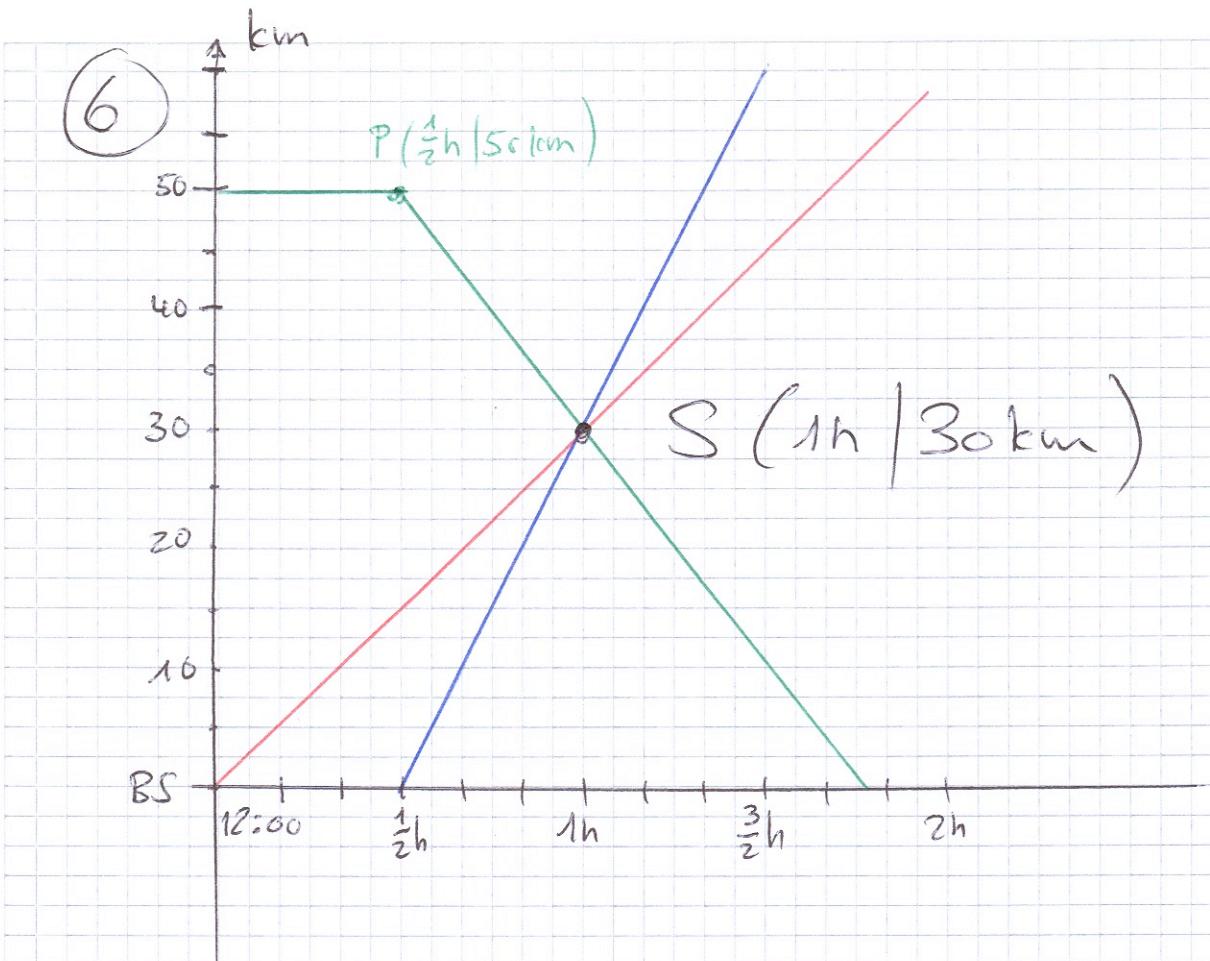
$$2 \cdot 5 = 50(0.015) + b$$

$$2 \cdot 5 = 0.75 + b$$

$$6 = 1.75$$

$$\underline{\underline{y = 0.015x + 1.75}}$$

$$\underline{\underline{0.15 \text{ Fr./Lohn}}}$$



$$A: y = 30x$$

$$B: y = 60x + b, P\left(\frac{1}{2} / 0\right) \Rightarrow b = -30$$

$$\underline{y = 60x - 30}$$

$$C: y = -40x + b, Q\left(\frac{1}{2} / 50\right) \Rightarrow b = 70$$

$$\underline{y = -40x + 70}$$

$$A \cap B: 30x = 60x - 30 \Rightarrow x = 1, y = 30; S_1 (1h / 30km)$$

$$A \cap C: 30x = -40x + 70 \Rightarrow x = 1, S_2 (1h / 30km)$$

$$B \cap C: 60x - 30 = -40x + 70$$

$$100x = 100$$

$$x = 1$$

$$S_3 (1h / 30km)$$

Meeting: 13:00h, 30km vor Basel