

LÖSUNGEN

$$1a) m = \frac{12,6 - 7,8}{4 - 2} = \frac{4,8}{2} = 2,4$$

$$\Rightarrow f(x) = 2,4x + b$$

$$A(2|7,8) \text{ auf } f \Rightarrow f(2) = 7,8$$
$$2,4 \cdot 2 + b = 7,8$$
$$4,8 + b = 7,8$$
$$b = 3$$

$$\Rightarrow f(x) = 2,4x + 3$$

$$b) y = f(5) = 2,4 \cdot 5 + 3 = 15$$

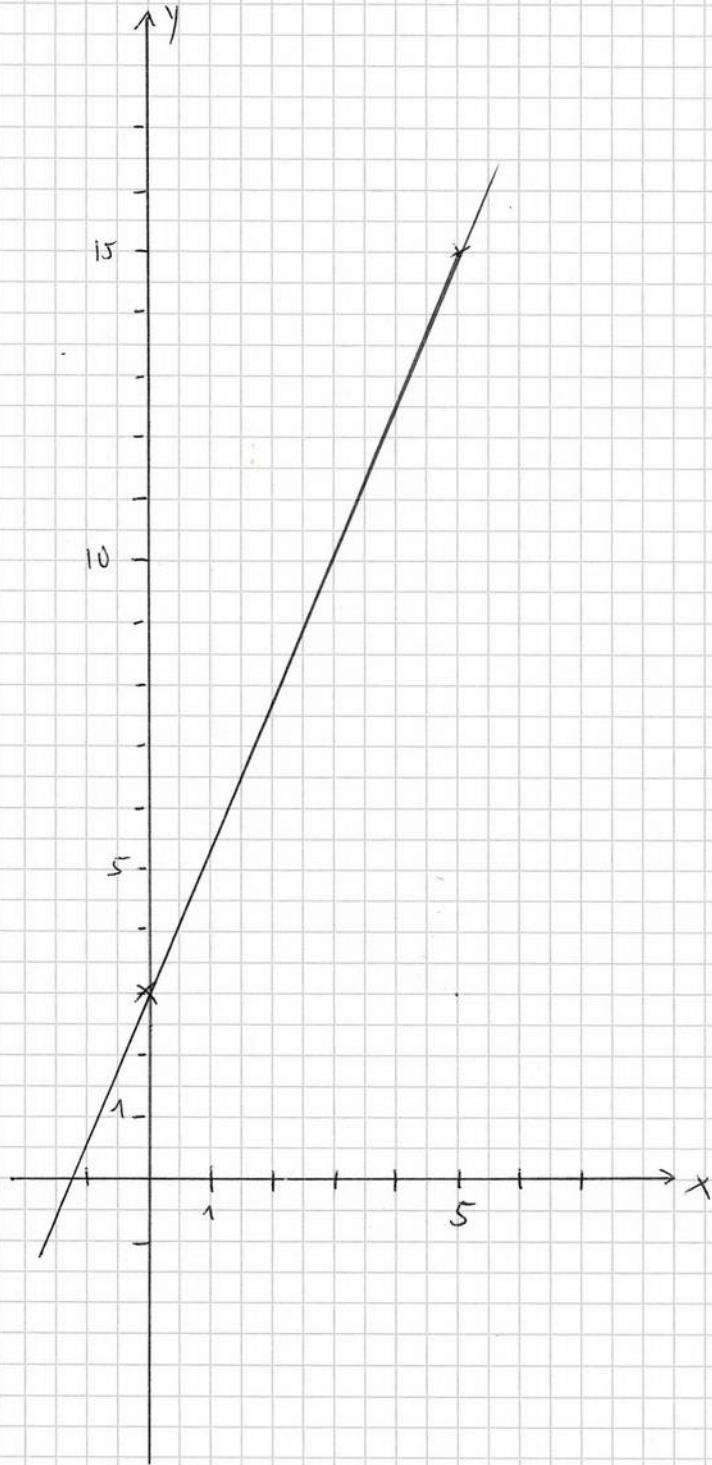
$$c) D(x|21) \text{ auf } f \Rightarrow f(x) = 21$$
$$2,4x + 3 = 21 \quad | -3$$
$$2,4x = 18 \quad | :2,4$$
$$x = 7,5$$

$$d) f(x) = 0$$
$$2,4x + 3 = 0$$
$$2,4x = -3$$
$$x = -1,25$$

$$e) S_y(0|3)$$

51

f)



52

53

$$g) f(x) = g(x)$$

$$2,4x + 3 = 0,8x + 5 \quad | -0,8x$$

$$1,6x + 3 = 5 \quad | -3$$

$$1,6x = 2 \quad | :1,6$$

$$x = 1,25$$

Einsetzen in f :

$$y = f(1,25) = 2,4 \cdot 1,25 + 3 = 6$$

$$\Rightarrow S(1,25/6)$$

$$h) h(x) = 2,4x + b$$

$$E(1/2) \text{ auf } h \Rightarrow h(1) = 2$$

$$2,4 \cdot 1 + b = 2$$

$$2,4 + b = 2 \quad | -2,4$$

$$b = -0,4$$

$$h(x) = 2,4x - 0,4$$

i) Wenn $E(1/2)$ auf f liegt, so müsste gelten $f(1) = 2$.

$$\text{Es gilt aber: } f(1) = 2,4 \cdot 1 + 3 = 5,4 \quad \nabla$$

$$j) F \text{ auf } f \Rightarrow f(x) = 2x$$

$$2,4x + 3 = 2x \quad | -2,4x$$

$$3 = -0,4x \quad | :(-0,4)$$

$$-7,5 = x$$

$$\Rightarrow F(-7,5 | -15)$$

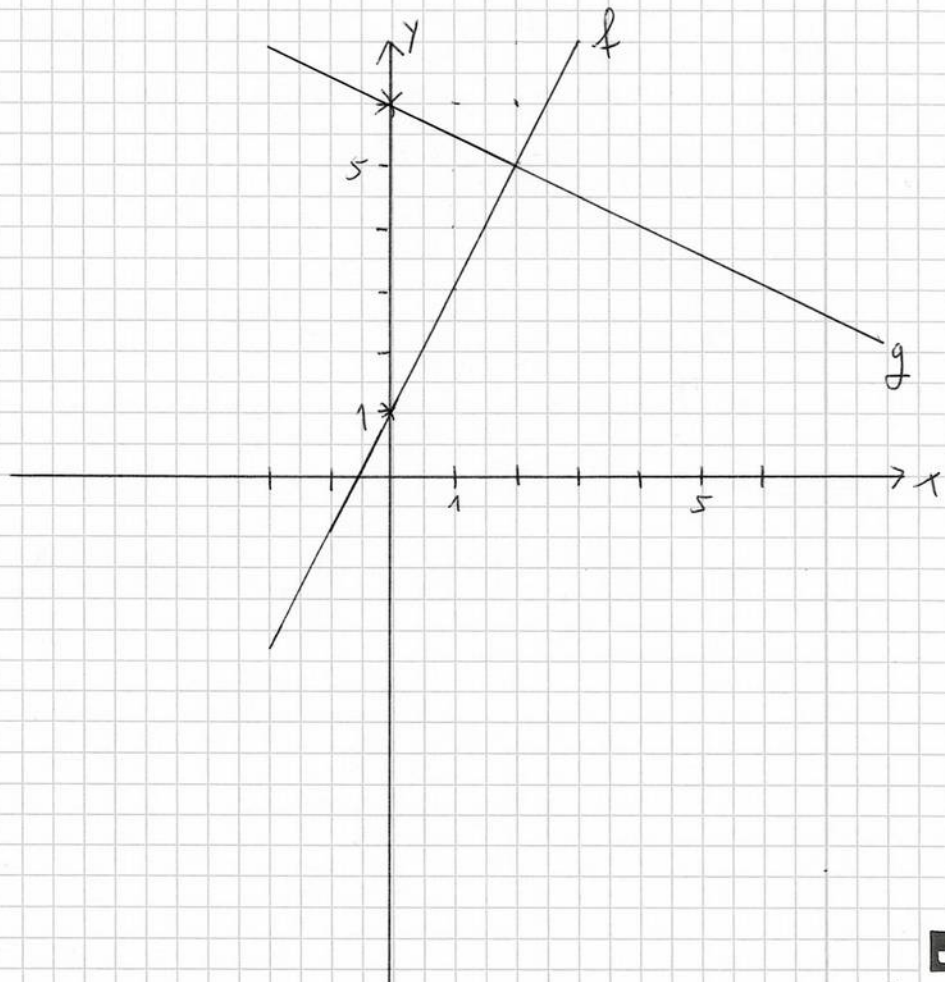
$$\text{2a) bei } f: S_y(0|1)$$

$$\text{bei } g: S_y(0|6)$$

$$\begin{aligned} \text{b) bei } f: f(x) &= 0 \\ 2x + 1 &= 0 \\ 2x &= -1 \\ x &= -0,5 \end{aligned}$$

$$\begin{aligned} \text{bei } g: g(x) &= 0 \\ -0,5x + 6 &= 0 \\ -0,5x &= -6 \\ x &= 12 \end{aligned}$$

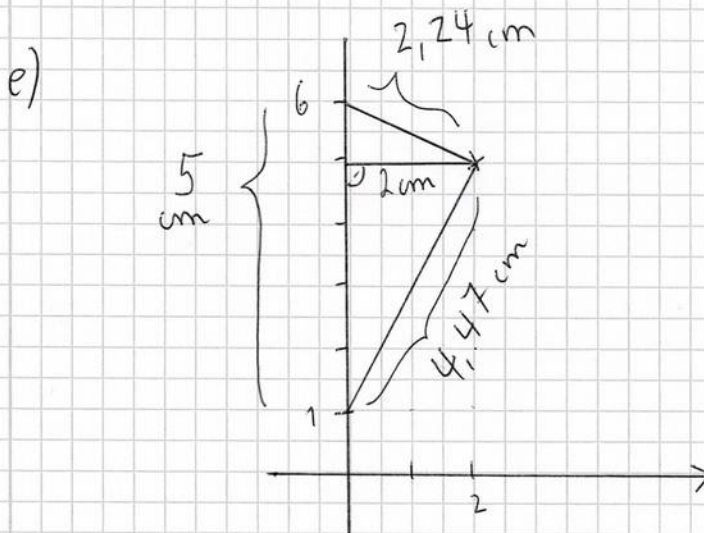
c)



$$\begin{array}{rcl}
 d) & f(x) = g(x) & \\
 & 2x + 1 = -0,5x + 6 & | +0,5x \\
 & 2,5x + 1 = 6 & | -1 \\
 & 2,5x = 5 & | :2,5 \\
 & x = 2 &
 \end{array}$$

Einsetzen in f:

$$\begin{aligned}
 y &= f(2) = 2 \cdot 2 + 1 = 5 \\
 &\Rightarrow S(2/5)
 \end{aligned}$$



$$A = \frac{1}{2} \cdot 5 \text{ cm} \cdot 2 \text{ cm} = 5 \text{ cm}^2$$

$$U = 5 \text{ cm} + 4,47 \text{ cm} + 2,74 \text{ cm} = 12,21 \text{ cm}$$

3a) Schnittpunkt mit der y-Achse: $S_y(0/3)$

Steigungsdreieck: 2 nach rechts
1 nach oben

$$\Rightarrow f(x) = \frac{1}{2}x + 3$$

b) $f(x) = 0$
 $0,5x + 3 = 0$
 $0,5x = -3$
 $x = -6$

c) $y = f(13) = 0,5 \cdot 13 + 3 = 9,5$

d) B auf $f \Rightarrow f(x) = -2$
 $0,5x + 3 = -2 \quad | -3$
 $0,5x = -5 \quad | : (0,5)$
 $x = -10$

e) $f(x) = g(x)$
 $0,5x + 3 = 2x - 3 \quad | -2x$
 $-1,5x + 3 = -3 \quad | -3$
 $-1,5x = -6 \quad | : (-1,5)$
 $x = 4$

Einsetzen in f :

$$y = f(4) = 0,5 \cdot 4 + 3 = 5$$

$$\Rightarrow S(4/5)$$

$$f) h(x) = 0,5x + b$$

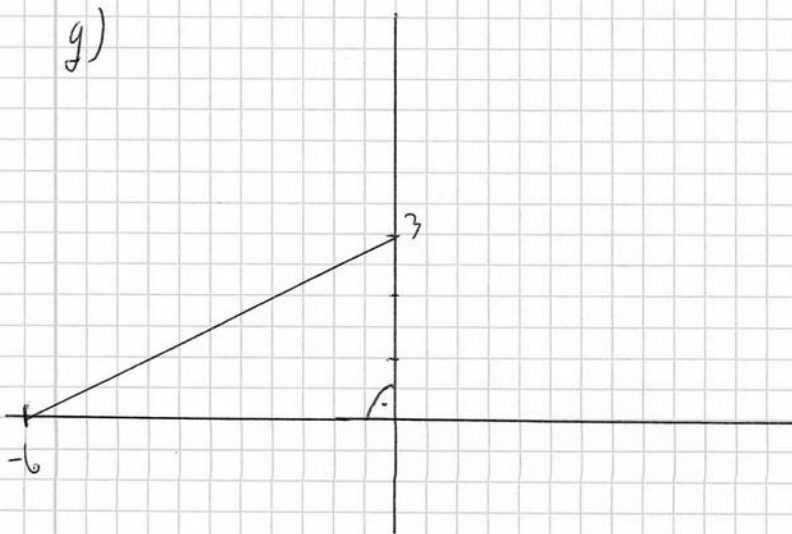
$$(2|5) \text{ auf } h \Rightarrow h(2) = 5$$

$$0,5 \cdot 2 + b = 5$$

$$1 + b = 5 \quad | -1$$

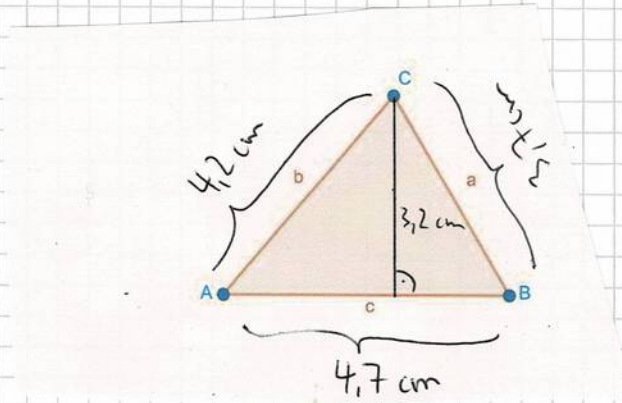
$$b = 4$$

$$\Rightarrow h(x) = 0,5x + 4$$



$$A = \frac{1}{2} \cdot 6 \cdot 3 = 9 \text{ cm}^2$$

4a)



$$U = a + b + c$$

$$U = 3,7 + 4,2 + 4,7$$

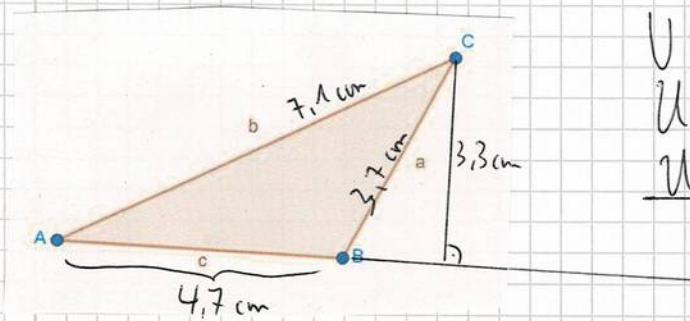
$$U = \underline{12,6 \text{ cm}}$$

$$A = \frac{1}{2} \cdot c \cdot h_c$$

$$A = \frac{1}{2} \cdot 4,7 \cdot 3,2$$

$$A = \underline{7,52 \text{ cm}^2}$$

b)



$$U = a + b + c$$

$$U = 3,7 + 7,1 + 4,7$$

$$U = \underline{15,5 \text{ cm}}$$

$$A = \frac{1}{2} \cdot c \cdot h_c$$

$$A = \frac{1}{2} \cdot 4,7 \cdot 3,3$$

$$A = \underline{7,755 \text{ cm}^2}$$

$$\begin{aligned}
 5a) \quad a + b + c &= U \\
 6,5 + 8 + c &= 17,5 \\
 14,5 + c &= 17,5 \quad | -14,5 \\
 \underline{c} &= \underline{3 \text{ cm}}
 \end{aligned}$$

$$A = \frac{1}{2} \cdot a \cdot h_a$$

$$A = \frac{1}{2} \cdot 6,5 \cdot 2,6 = \underline{8,45 \text{ cm}^2}$$

$$A = \frac{1}{2} \cdot b \cdot h_b$$

$$8,45 = \frac{1}{2} \cdot 8 \cdot h_b$$

$$8,45 = 4 \cdot h_b \quad | :4$$

$$\underline{2,1125 \text{ cm}} = h_b$$

$$\begin{aligned}
 b) \quad a + b + c &= U \\
 6 + 8 + 10 &= U \\
 \underline{24 \text{ cm}} &= \underline{U}
 \end{aligned}$$

$$A = \frac{1}{2} \cdot a \cdot h_a$$

$$A = \frac{1}{2} \cdot 6 \cdot 8$$

$$\underline{A = 24 \text{ cm}^2}$$

$$A = \frac{1}{2} \cdot b \cdot h_b$$

$$24 = \frac{1}{2} \cdot 8 \cdot h_b$$

$$24 = 4 \cdot h_b \quad | :4$$

$$\underline{6 \text{ cm}} = h_b$$

$$c) \quad A = \frac{1}{2} \cdot a \cdot h_a$$

$$8,875 = \frac{1}{2} \cdot a \cdot 3,55$$

$$8,875 = 0,5 \cdot a \cdot 3,55$$

$$8,875 = 0,5 \cdot 3,55 \cdot a$$

$$8,875 = 1,775 \cdot a \quad | : 1,775$$

$$\underline{5 \text{ cm} = a}$$

$$a + b + c = U$$

$$5 + b + 3,78 = 13,88$$

$$b + 8,78 = 13,88 \quad | - 8,78$$

$$\underline{b = 5,1 \text{ cm}}$$

$$A = \frac{1}{2} \cdot b \cdot h_b$$

$$8,875 = \frac{1}{2} \cdot 5,1 \cdot h_b$$

$$8,875 = 2,55 \cdot h_b \quad | : 2,55$$

$$\underline{3,48 \text{ cm} \approx h_b}$$

$$d) \quad a + b + c = U$$

$$6 + 5,5 + 3,7 = U$$

$$\underline{15,2 \text{ cm} = U}$$

$$A = \frac{1}{2} \cdot a \cdot h_a$$

$$10 = \frac{1}{2} \cdot 6 \cdot h_a$$

$$10 = 3 \cdot h_a \quad | : 3$$

$$\underline{3,3 \text{ cm} = h_a}$$

$$A = \frac{1}{2} \cdot b \cdot h_b$$

$$10 = \frac{1}{2} \cdot 5,5 \cdot h_b$$

$$10 = 2,75 \cdot h_b \quad | : 2,75$$

$$\underline{3,63 \text{ cm} = h_b}$$

$$\begin{aligned}
 \text{e)} \quad a + b + c &= U \\
 3 + 4 + c &= 12 \\
 7 + c &= 12 \quad | -7 \\
 \underline{c} &= \underline{5 \text{ cm}}
 \end{aligned}$$

$$\begin{aligned}
 A &= \frac{1}{2} \cdot a \cdot h_a \\
 6 &= \frac{1}{2} \cdot 3 \cdot h_a \\
 6 &= 1,5 \cdot h_a \quad | : 1,5 \\
 \underline{4 \text{ cm}} &= \underline{h_a}
 \end{aligned}$$

$$\begin{aligned}
 A &= \frac{1}{2} \cdot b \cdot h_b \\
 6 &= \frac{1}{2} \cdot 4 \cdot h_b \\
 6 &= 2 \cdot h_b \quad | : 2 \\
 \underline{3 \text{ cm}} &= \underline{h_b}
 \end{aligned}$$

$$\begin{aligned}
 \text{f)} \quad a + b + c &= U \\
 a + 3 + 4 &= 12 \\
 a + 7 &= 12 \quad | -7 \\
 \underline{a} &= \underline{5 \text{ cm}}
 \end{aligned}$$

$$\begin{aligned}
 A &= \frac{1}{2} \cdot a \cdot h_a \\
 6 &= \frac{1}{2} \cdot 5 \cdot h_a \\
 6 &= 2,5 \cdot h_a \quad | : 2,5 \\
 \underline{2,4 \text{ cm}} &= \underline{h_a}
 \end{aligned}$$

$$\begin{aligned}
 A &= \frac{1}{2} \cdot b \cdot h_b \\
 6 &= \frac{1}{2} \cdot 3 \cdot h_b \\
 6 &= 1,5 \cdot h_b \quad | : 1,5 \\
 \underline{4 \text{ cm}} &= \underline{h_b}
 \end{aligned}$$

$$\begin{aligned}
 \text{6a)} \quad a + b + c &= U \\
 5,95 + 5,78 + c &= 15,71 \\
 11,53 + c &= 15,71 \quad | - 11,53 \\
 \underline{c} &= \underline{3,68 \text{ cm}}
 \end{aligned}$$

$$\alpha + \beta + \gamma = 180^\circ$$

$$\alpha + 66,05^\circ + 37,05^\circ = 180^\circ$$

$$\alpha + 103,1^\circ = 180^\circ \quad | - 103,1^\circ$$

$$\underline{\alpha = 76,90^\circ}$$

$$b) \quad a + b + c = U$$

$$5,95 + 3,54 + 3,71 = U$$

$$\underline{13,20 \text{ cm} = U}$$

$$\alpha + \beta + \gamma = 180^\circ$$

$$110,15^\circ + 34^\circ + \gamma = 180^\circ$$

$$144,15^\circ + \gamma = 180^\circ \quad | - 144,15^\circ$$

$$\underline{\gamma = 35,85^\circ}$$

7a)



$$\alpha = \beta \Rightarrow \underline{\beta = 40^\circ}$$

$$\alpha + \beta + \gamma = 180^\circ$$

$$40^\circ + 40^\circ + \gamma = 180^\circ$$

$$80^\circ + \gamma = 180^\circ \quad | - 80^\circ$$

$$\underline{\gamma = 100^\circ}$$

b) Fall 1:



$$\alpha = \beta \Rightarrow \underline{\beta = 30^\circ}$$

$$\alpha + \beta + \gamma = 180^\circ$$

$$30^\circ + 30^\circ + \gamma = 180^\circ$$

$$60^\circ + \gamma = 180^\circ$$

$$\underline{\gamma = 120^\circ}$$



Fall 2:



$$\beta = \gamma$$

$$\begin{aligned} \alpha + \beta + \gamma &= 180^\circ \\ \alpha + \beta + \beta &= 180^\circ \\ 30^\circ + 2\beta &= 180^\circ \quad | -30^\circ \\ 2\beta &= 150^\circ \quad | :2 \\ \beta &= 75^\circ \\ \Rightarrow \underline{\underline{\gamma}} &= \underline{\underline{75^\circ}} \end{aligned}$$

c)

$$\begin{aligned} \alpha + \beta + \gamma &= 180^\circ & \beta &= 2\gamma \\ 50^\circ + 2\gamma + \gamma &= 180^\circ \\ 50^\circ + 3\gamma &= 180^\circ \quad | -50^\circ \\ 3\gamma &= 130^\circ \quad | :3 \\ \gamma &= 43,\bar{3}^\circ \\ \Rightarrow \underline{\underline{\beta}} &= \underline{\underline{86,\bar{6}^\circ}} \end{aligned}$$

