

# Aufgaben Kapitel 1.1

①  $f(x) = 1 + x^2$

$D = ]-\infty, \infty[$

$W = ]-\infty, \infty[$

②  $F(x) = \sqrt{5x + 10}$

$D = [-2, \infty[$

$W = [0, \infty[$

③  $f(t) = \frac{4}{3-t}$

$D = ]-\infty, 3[ \cup ]3, \infty[$

④ b) für jedes  $x$  gibt es nur ein  $y$

senkrecht

2 ⑤  $f(x)$

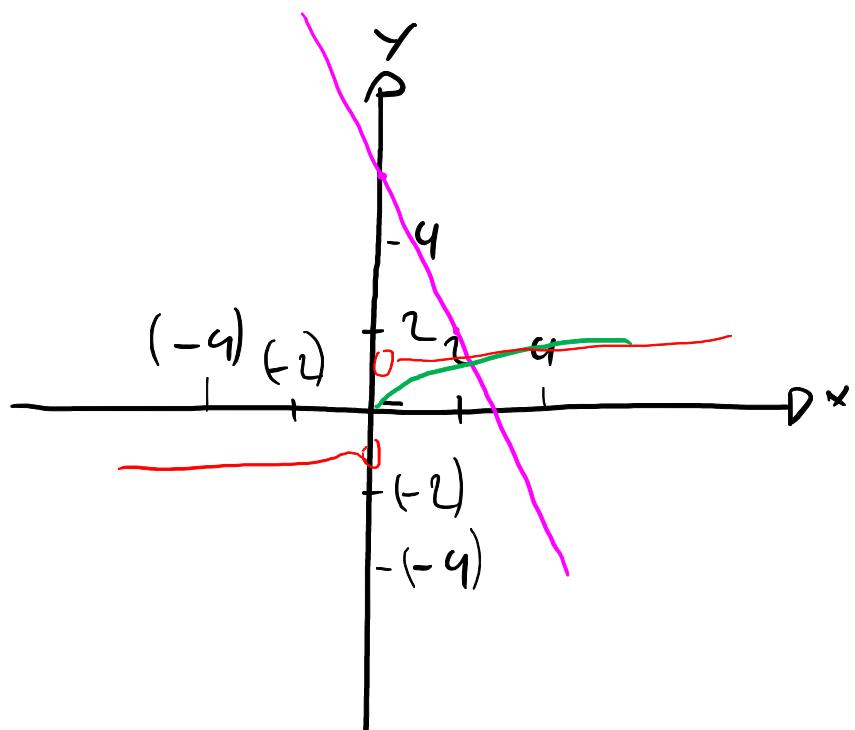
Graph: 7, 8, 9

6  $L(x) =$

7  $f(x) = \underline{5 - 2x}$

$D: ]-\infty, \infty[$

$$\begin{aligned} 1 &= 5 - 2x & | -5 \\ -4 &= -2x & | :(-2) \\ 2 &= x \end{aligned}$$



$$\textcircled{8} \quad g(x) = \sqrt{|x|}$$

$$\mathbb{D}: [0, \infty[$$

$$\textcircled{9} \quad F(t) = \frac{t}{|t|}$$

$$\mathbb{D}: ]-\infty, 0[ \cup ]0, \infty[$$

L  
W

\textcircled{13} a)

\textcircled{14} a)

b)

b)

$$\textcircled{15} \quad y = -x^3 \rightarrow \text{symmetrisch an Ursprung} \rightarrow \text{gerade}$$

Da Betragsfunktion nur als 4

$$\textcircled{16} \quad y = \sqrt{|x|} \rightarrow \text{symmetrisch an y-Achse}$$

$$\textcircled{17} \quad y = -x^{\frac{3}{2}} = -\sqrt{x^3} \rightarrow \text{symmetrisch an Ursprung}$$

keine Symmetrie

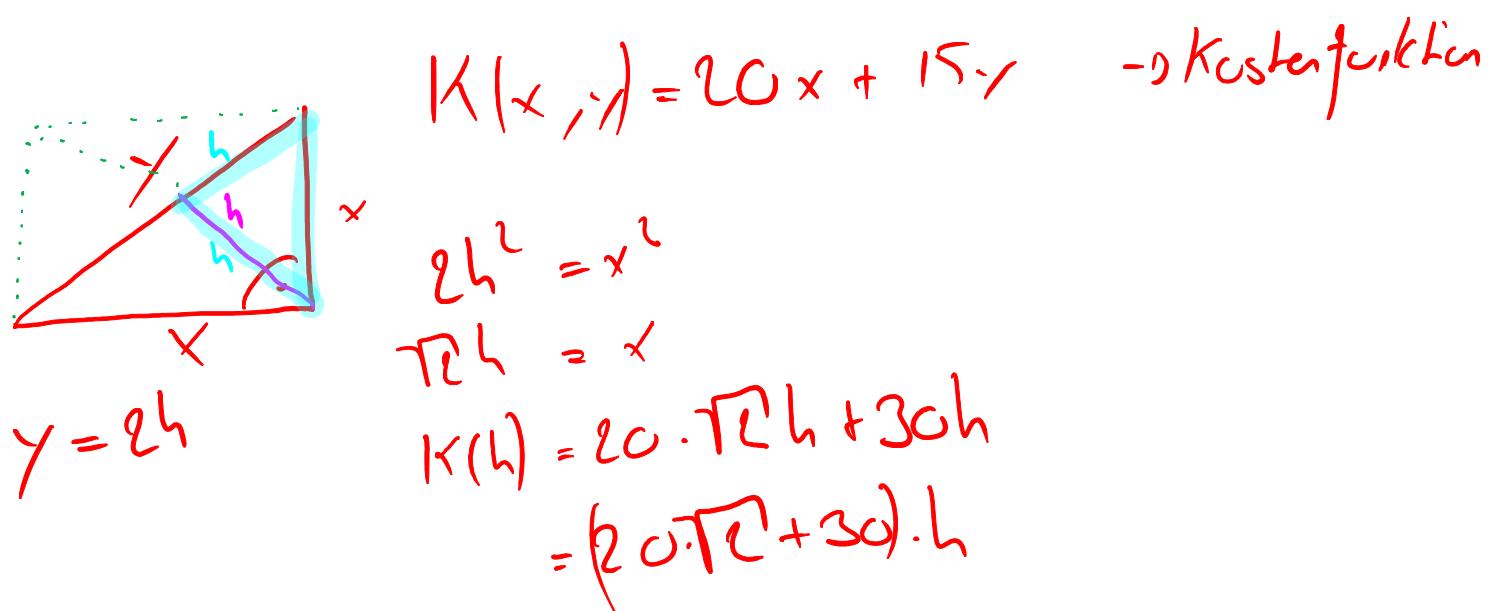
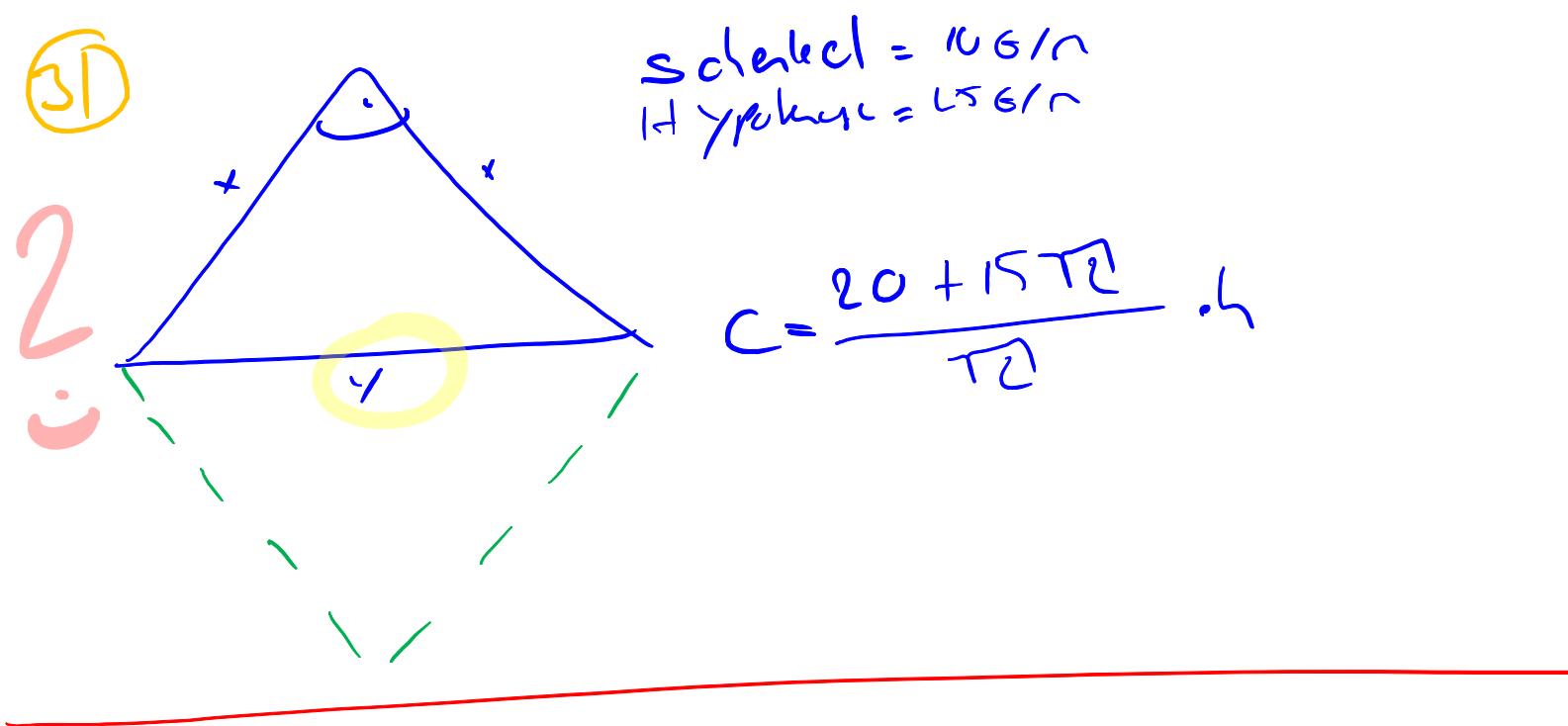
$$\textcircled{18} \quad f(x) = x^2 + 1 \rightarrow \text{gerade}$$

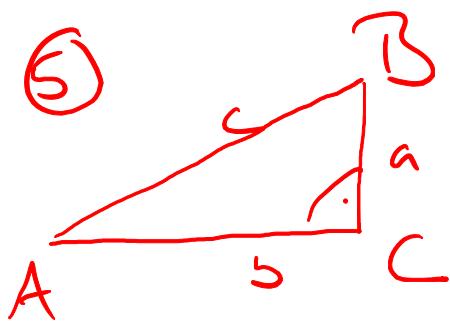
$$\textcircled{19} \quad g(x) = \frac{1}{x^2 - 1} \rightarrow \text{gerade}$$

$$\textcircled{20} \quad h(t) = Lt + 1 \rightarrow \text{weder odd}$$

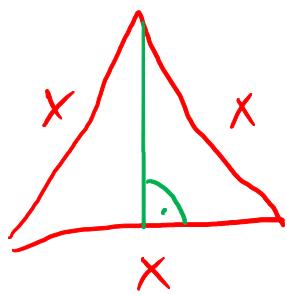
$$\textcircled{21} \quad f(x) = (14 - 2x) \cdot (12 - 2x) \cdot x \rightarrow \text{gen. Erstz.}$$

$$\textcircled{22} \quad \text{a) blau } f \quad \text{b) pink } h \quad \text{c) orange } g$$

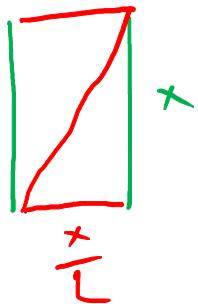




$$a^2 + b^2 = c^2$$



$$\text{Umfang } (\alpha) = 3x$$



$$\text{Fläche } (x, h) = \frac{x}{2} \cdot h = \frac{\sqrt{3}x^2}{4}$$

$$h^2 + \left(\frac{x}{2}\right)^2 = x^2$$

$$h^2 = x^2 - \frac{x^2}{4} = \frac{3x^2}{4} \quad | \sqrt$$

$$h = \frac{\sqrt{3}x}{2}$$

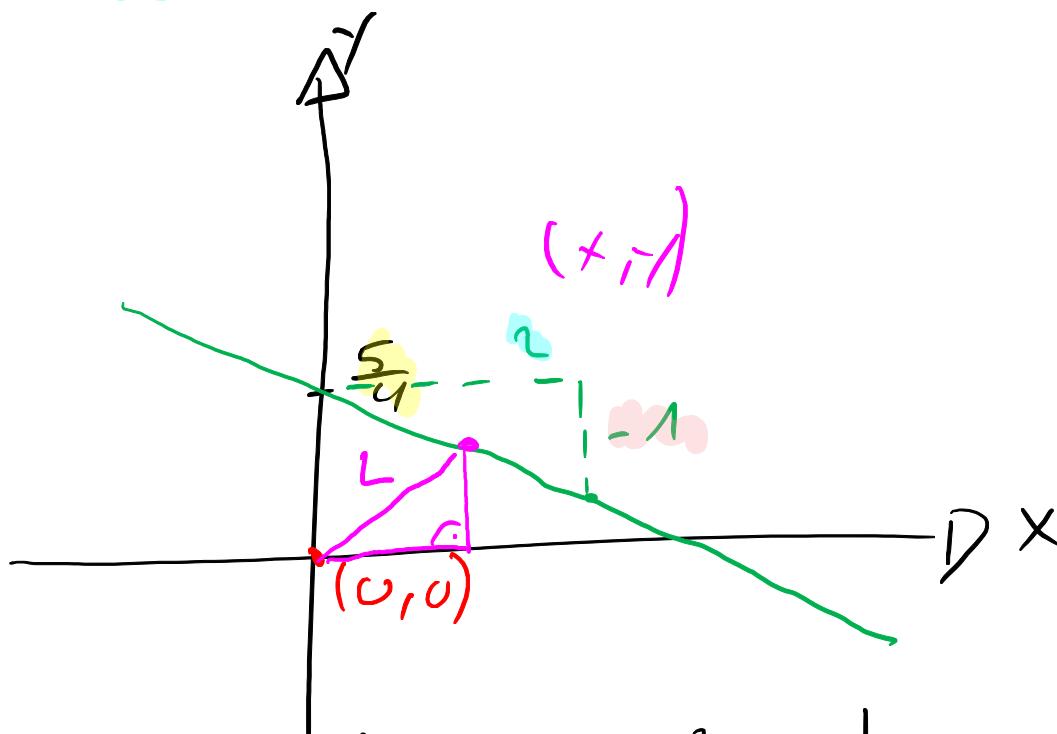
6

implizite Form

$$y = m \cdot x + b$$

$$4y = -8x + 5 \quad | :4$$

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



$$L^2(x_1, y_1) = x^2 + y^2 \quad | \sqrt{\phantom{x}}$$

$$L(x, y) = \sqrt{x^2 + y^2}$$

$$L(x) = \sqrt{x^2 + \left(-\frac{1}{2}x + \frac{5}{4}\right)^2} \quad \text{-> Bimodale Formel}$$

$$L(x) = \sqrt{x^2 + \frac{1}{4}x^2 - \frac{5}{4}x + \frac{25}{16}}$$

$$= \sqrt{\frac{5}{4}x^2 - \frac{5}{4}x + \frac{25}{16}}$$

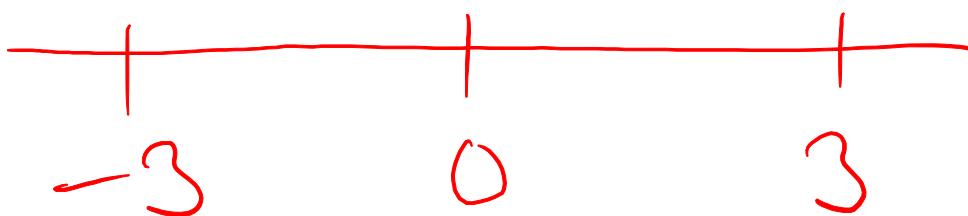
$$= \sqrt{\frac{20}{16}x^2 - \frac{20}{16}x + \frac{25}{16}}$$

| H.N.: 16

$$= \frac{120x^2 - 20x + 25}{4}$$

(1)

$$|x| = \begin{cases} x & \text{Wenn } x \geq 0 \\ -x & \text{Wenn } x < 0 \end{cases}$$



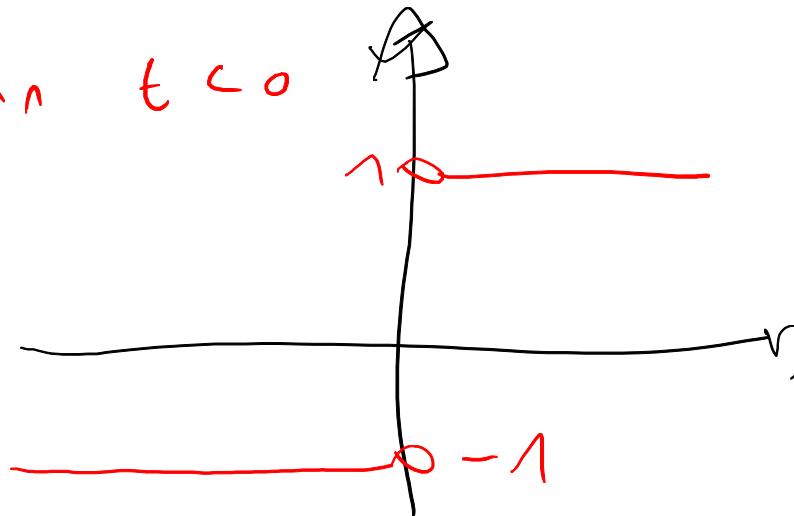
$$|-3|$$

$$|3|$$

$$(-3) \cdot (-1) = 3$$

$$F(t) = \frac{t}{|t|}$$

$$\bar{F}(t) = \begin{cases} 1 & \text{Wenn } t > 0 \\ -1 & \text{Wenn } t < 0 \end{cases}$$



13) a)

$$y = \begin{cases} m_1 x + b & \text{wenn } x > 1 \\ m_2 x + b_2 & \text{wenn } x < 1 \end{cases}$$

Funktion  
drei  
Stück

$$b_1 = 0$$

$$b_2 =$$

$$m_1 = \frac{1}{1} = 1$$

$$m_2 = -1$$

$$y = \begin{cases} x & \text{wenn } 0 \leq x \leq 1 \\ -x + 2 & \text{wenn } 1 < x \leq 2 \end{cases}$$

1-1 a)

$$y = \begin{cases} -x + 2 & \text{für } 0 < x \leq 2 \\ -\frac{1}{3}x + \frac{5}{3} & \text{für } 2 < x \leq 5 \end{cases}$$

18 Volumen = Länge · Höhe · Breite

$$V(x) = (22 - L_d)(11 - L_d)x \\ = 4x^3 - 72x^2 + 308x$$

D = ]0, 7[ sinnvoller  
Definitionsbereich