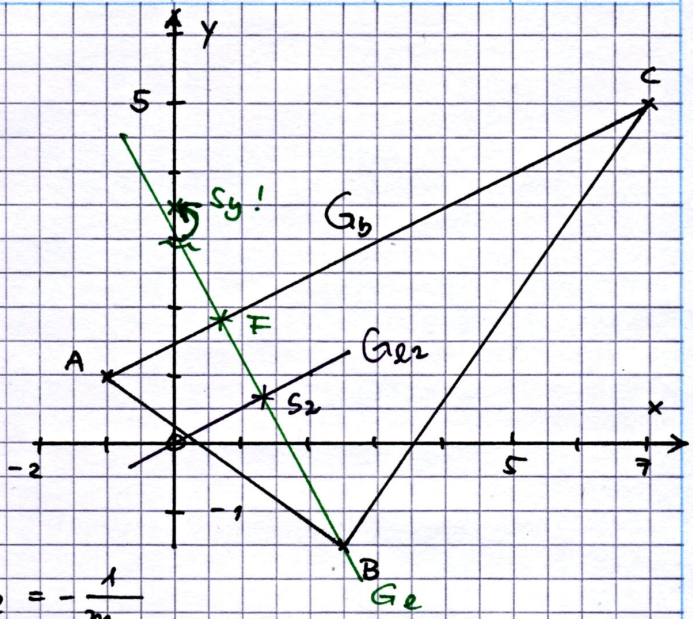
Name | Klasse | Datum | Seite / Blatt

Lineare Funktionen

Aufgabe 3



1. $m_{AB} = \frac{-1,5-1}{2,5-(-1)} = -\frac{5}{7}$

$m_{BC} = \frac{5-(-1,5)}{7-2,5} = \frac{13}{10}$

$m_{AB} \cdot m_{BC} \neq -1$

$\Rightarrow$ kein rechter Wi. bei B

2. $m_l \cdot m_{AC} = -1 \Leftrightarrow m_l = -\frac{1}{m_{AC}}$

$m_{AC} = \frac{5-1}{7+1} = \frac{1}{2} \Rightarrow m_l = -2$

$t = y_B - (-2) \cdot x_B = -1,5 - (-2) \cdot 2,5 = 3,5$ $\Rightarrow l(x) = -2x + 3,5$

$t = y_A - m_{AC} \cdot x_A = 1 - (\frac{1}{2}) \cdot (-1) = 1,5 \Rightarrow b(x) = \frac{1}{2}x + 1,5$

$b(x) = l(x) : \frac{1}{2}x + 1,5 = -2x + 3,5 \Leftrightarrow x = \frac{4}{5}$

$l(\frac{4}{5}) = -2 \cdot \frac{4}{5} + 3,5 = \frac{19}{10}$ $\quad F(\frac{4}{5} \mid \frac{19}{10}) = F(0,8 \mid 1,9)$

3. $d(B; AC) = \overline{BF} = \sqrt{(2,5-0,8)^2 + (-1,5-1,9)^2} \approx 3,45$

$= \frac{\sqrt{389}}{5}$

4. $\overline{AC} = \sqrt{8^2+4^2} = \sqrt{80} = 4\sqrt{5}$

$A_{ABC} = \frac{1}{2} \cdot 4\sqrt{5} \cdot \frac{\sqrt{389}}{5} \approx 17,6 = \frac{2}{5}\sqrt{1945}$

5. $\overline{FC} = \sqrt{(7-0,8)^2 + (5-1,9)^2} = \sqrt{\frac{221}{4}} = \frac{1}{2}\sqrt{221}$

$A_{BFC} = \frac{1}{2} \cdot \overline{FC} \cdot \overline{FB} = \frac{1}{2} \cdot \frac{1}{2}\sqrt{221} \cdot \sqrt{389} \cdot \frac{1}{5} = \frac{1}{20}\sqrt{85969}$

6. $l_2(x) = \frac{1}{2}x$; $l_2(x) = l(x) \Rightarrow \frac{1}{2}x = -2x + 3,5 \Leftrightarrow x_S = \frac{7}{5}$

$l_2(7/5) = 7/10 \Rightarrow S_2(\frac{7}{5} \mid \frac{7}{10})$

$d_2 = \sqrt{(\frac{7}{5})^2 + (\frac{7}{10})^2} = \sqrt{\frac{49}{20}} = \frac{7\sqrt{5}}{10}$