

Aufgabe 4

4.0 Geg: $f(x) = -\frac{1}{3}x + 3,5$; $D_f = \mathbb{R}$

4.1 $S_f(0|3,5)$; $-\frac{1}{3}x + 3,5 = 0 \Leftrightarrow x = 3 \cdot 3,5 = 10,5 \text{ N } (10,5|0)$

4.2 $P(2,5|6)$; $m_e = 3$; $B = y - mx = 6 - (3) \cdot 2,5 = -\frac{3}{2}$
 $l(x) = 3x - 1,5$

4.3 $l(x) = f(x) \Rightarrow 3x - 1,5 = -\frac{1}{3}x + 3,5 \Leftrightarrow \frac{10}{3}x = 5 \Leftrightarrow x = \frac{7,5}{10} = 1,5$
 $l(1,5) = 3 \cdot 1,5 - 1,5 = 3 \Rightarrow S(1,5|3)$

4.4 $A_4 = \frac{1}{2}gh = \frac{1}{2} \cdot 5 \cdot 1,5 = \frac{15}{4} = 3,75 \text{ [FE]}$

4.5 $m = \frac{y_s - y_a}{x_s - x_a} = \frac{3 - (-1)}{1,5 - (-4,5)} = \frac{4}{6} = \frac{2}{3}$ } $g(x) = \frac{2}{3}x + 2$
 $B = y_a = mx_a = -1 - \frac{2}{3} \cdot (-4,5) = 2$

4.6 $A_1 = \frac{1}{2}g_1h$; $A_2 = \frac{1}{2}g_2h$; $h_1 = h_2 \Rightarrow \frac{A_1}{A_2} = \frac{\frac{1}{2}g_1h}{\frac{1}{2}g_2h} = \frac{g_1}{g_2}$

$\frac{A_1}{A_2} = \frac{7,5}{3} = \frac{1}{2} \quad (2A_1 = A_2)$

