Graph of a Linear Function

1. Use the slope triangle to determine the slope of the straight line through the given points.

   a) $A\ (5|7)$, $B\ (-3|8)$ _____

   b) $A\ (1|2)$, $B\ (3|4)$ _____

2. Why are the lines $g: y = -0{,}5 \cdot x + 2$ and $h: y = -0{,}5 \cdot x - 3$ parallel?

   Calculate the distance between the two straight lines.

3. Experiments with sketchometry

   a) What is the slope of the straight line through the points $A(0{,}5|3{,}5)$ and $B(4|-1)$? What is the equation of the function?

   b) Confirm the equation by calculation.

4. Experiments with sketchometry

   a) Draw a straight line through the points $A(-3|-2)$ and $B(2{,}5|3{,}5)$.

   b) Write the equation of this line.

   c) Draw the perpendicular to this line that passes through the point $C\ (2|1)$.

   d) Write the equation of this perpendicular line.

   e) Calculate the point of intersection of the two lines.

   f) "Check" your finding with sketchometry.

5. Write an equation for the line that passes through the point $P(3|5)$ and is perpendicular to the line $y = 3 \cdot x + 2$.

6. Find the equation of the line that is parallel to the x-axis and passes through the point $P(-3|4)$.

7. Find the equation of the line g that is parallel to line $y = 3 \cdot x - 2$ and passes through the point $P(1|0)$.

8. Calculate th point of intersection of the two lines $y = 3 \cdot x + 4$ and $y = -2 \cdot x + 14$.

   Control your result with a sketchometry construction.

9. For a linear function $f(x)$ holds: $f(0) = 3$ and $f(-2) = 4$. Find $f(x)$.

10. For which x-values holds $f(x) > 0$?

    a) $f(x) = 0{,}4 \cdot x + 1$

    b) $f(x) = -1{,}5 \cdot (x - 2)$

    c) $f(x) = \frac{x}{5} - \frac{7}{5}$