

24D3, 21.6.2018

①

$$f: y = -2x + 6$$

$$g: y = \frac{2}{5}x - \frac{1}{5}$$

$$h: y = \frac{1}{2}x + \frac{7}{2}$$

② $P(-3/7); Q(4/-\frac{7}{2}); f: y = -\frac{3}{2}x + \frac{5}{2}$

$$y = -\frac{3}{2} \cdot (-3) + \frac{5}{2}$$

$$y = \frac{9}{2} + \frac{5}{2}$$

$$y = 7$$

$$P(-3/7)$$

$$Q(4/-\frac{7}{2})$$

$$-\frac{7}{2} = -\frac{3}{2}x + \frac{5}{2} \quad | \cdot 2$$

$$-7 = -3x + 5$$

$$3x = 12$$

$$x = 4$$

③ $A(7/3); B(3/2/3); f: y = \frac{2}{3}x - \frac{5}{3}$

$$A: 3 = \frac{2}{3} \cdot 7 - \frac{5}{3}$$

$$3 = \frac{14}{3} - \frac{5}{3}$$

$$3 = \frac{9}{3} = 3$$

✓

$$A \in f$$

$$B: \frac{2}{3} = \frac{2}{3} \cdot 3 - \frac{5}{3}$$

$$\frac{2}{3} = 2 - \frac{5}{3}$$

$$\frac{2}{3} = \frac{6}{3} - \frac{5}{3} = \frac{1}{3} \quad f$$

$$B \notin f$$

$$\frac{2}{3} = \frac{6}{3} - \frac{5}{3}$$

L

$$\textcircled{5} \quad P(-1 | -\frac{1}{2}), Q(5 | -5)$$

$$m = \frac{-5 - (-\frac{1}{2})}{5 - (-1)} = \frac{-5 + \frac{1}{2}}{6} = \frac{-\frac{9}{2}}{\frac{6}{1}} = -\frac{9}{12} = -\frac{3}{4}$$

$$\hookrightarrow y = -\frac{3}{4}x + q$$

$$Q(5 | -5) : -5 = -\frac{3}{4} \cdot 5 + q$$

$$-5 = -\frac{15}{4} + q$$

$$-\frac{5}{4} = q$$

$$\underline{\underline{y = -\frac{3}{4}x - \frac{5}{4}}}$$

$$y = mx + q : \quad P(-1 | -\frac{1}{2}) : -\frac{1}{2} = -m + q$$

$$Q(5 | -5) : -5 = 5m + q$$

$$4.5 = -6m$$

$$m = -\frac{4.5}{6} = -\frac{9}{12} = -\frac{3}{4}$$

$$-5 = 5(-\frac{3}{4}) + q$$

$$-\frac{20}{4} = -\frac{15}{4} + q$$

$$q = -\frac{5}{4}$$

L

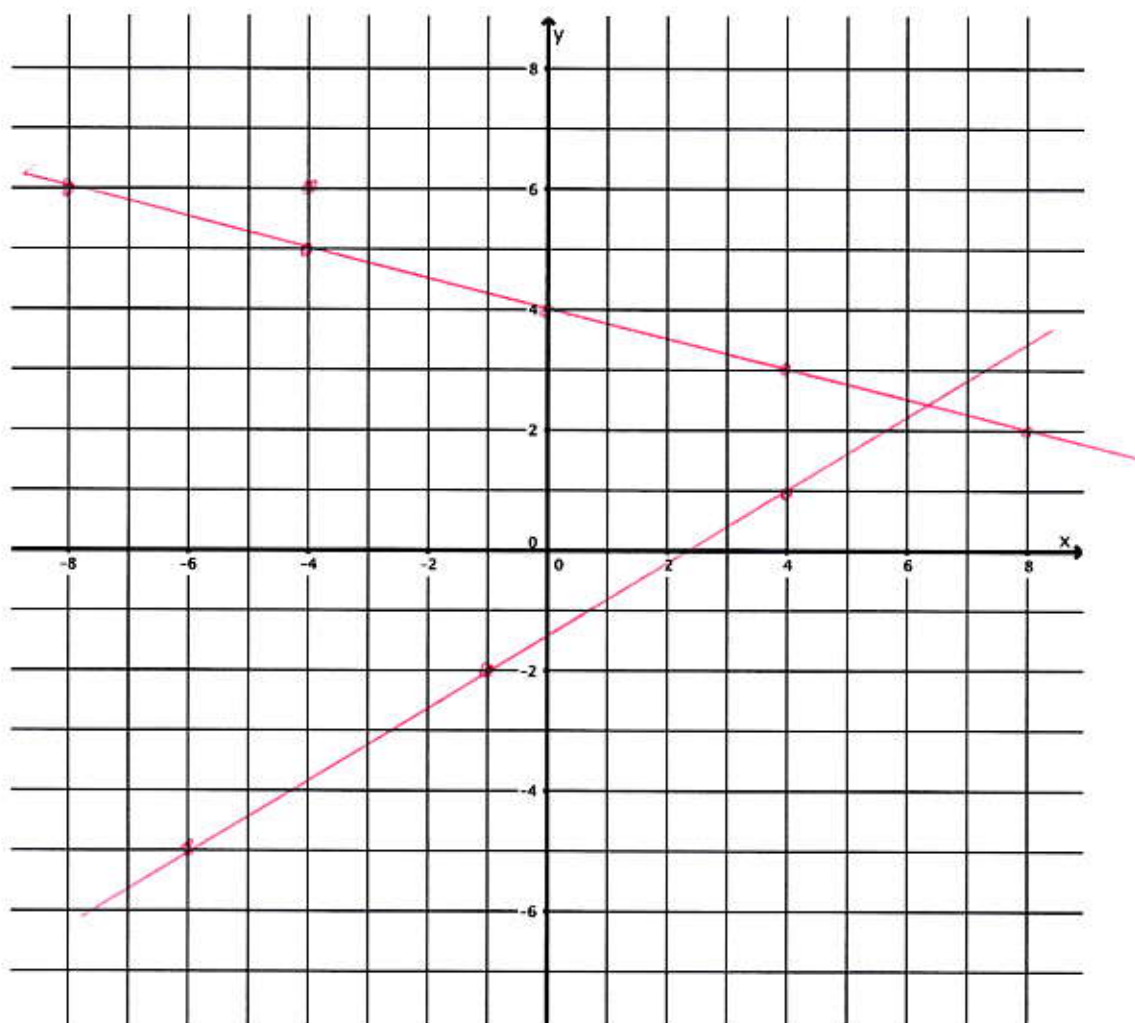
3. Liegen die beiden Punkte $A(7 | 3)$ und $B(3 | \frac{2}{3})$ auf der Gerade g ? Entscheiden Sie mittels Rechnung.

$$f : y = \frac{2}{3}x - \frac{5}{3}$$

4. Zeichnen Sie die beiden Geraden g und h in das Koordinatensystem ein. Markieren und beschriften Sie pro Gerade zwei Punkte mit ganzzahligen Koordinaten.

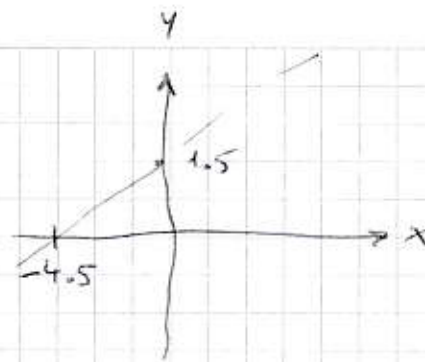
$$g : y = -\frac{1}{4}x + 4$$

$$h : y = \frac{3}{5}x - \frac{7}{5}$$



Fortsetzung auf der nächsten Seite ...

6



$$P_1(-4.5/0)$$

$$P_2(0/1.5)$$

$$g = 1.5$$

$$y = mx + 1.5$$

~~$$P_2(0/1.5): 1.5$$~~

$$P_1(-4.5/0): 0 = -4.5m + 1.5$$

$$4.5m = 1.5$$

$$m = \frac{1.5}{4.5} = \frac{3}{9} = \underline{\underline{\frac{1}{3}}}$$

g

$$K: y = \frac{1}{3}x + 1.5$$

7 $f: y = \frac{2}{3}x - \frac{26}{3}$

g \perp f, g geht durch Nullpunkt: $\frac{2}{3} \cdot m_2 = -1$
 $m_2 = \underline{\underline{-\frac{3}{2}}}$

$$g: y = -\frac{3}{2}x$$

g mit f schneiden: $-\frac{3}{2}x = \frac{2}{3}x - \frac{26}{3} \quad | \cdot 6$

$$-9x = 4x - 52 \quad | +9x + 52$$

$$52 = 13x$$

$$x = 4; y = -\frac{3}{2}x = -6$$

$$\hookrightarrow S(4/-6)$$

$$d = \sqrt{x^2 + y^2} = \sqrt{16 + 36} = \sqrt{52} = \sqrt{4 \cdot 13} = \underline{\underline{2\sqrt{13}}}$$

$$\approx 7.21$$

$$\textcircled{8} \quad P(-1/2); Q(5/-2)$$

$$M_{\overline{PQ}} \left(\frac{-1+5}{2} \mid \frac{2-2}{2} \right)$$

$$M_{\overline{PQ}} (2/0)$$

$$m_1 = \frac{-2-2}{5-(-1)} = \frac{-4}{6} = -\frac{2}{3}$$

$$m_1 \cdot m_2 = -1$$

$$-\frac{2}{3} \cdot m_2 = -1$$

$$m_2 = \frac{-1}{-\frac{2}{3}} = \frac{3}{2}$$

$$\hookrightarrow y = \frac{3}{2}x + q \quad ; \quad M(2/0) \text{ einsetzen}$$

$$0 = \frac{3}{2} \cdot 2 + q$$

$$q = -3$$

$$M_{\overline{PQ}} : \underline{\underline{y = \frac{3}{2}x - 3}}$$