

Klausur Lösung 1. Semester Aufgabe Vorlesung 2013

$$1.1 \quad (2x-2)(3x+1) = 3(2x^2-4x+2)$$

$$6x^2 + 2x - 6x - 2 = 6x^2 - 12x + 6$$

$$8x = 8$$

3Bk

$$x = 1; L = \{1\}$$

$$1.2 \quad (-3)(x-4)(x+4) = (x-4)^2 - (2x+3)^2$$

$$(-3)(x^2 - 16) = x^2 - 8x + 16 - [4x^2 + 12x + 9]$$

$$-3x^2 + 48 = x^2 - 8x + 16 - 4x^2 - 12x - 9$$

$$-3x^2 + 48 = -3x^2 - 20x + 7$$

$$20x = -41$$

$$x = \frac{-41}{20} = -2,05; L = \{-2,05\}$$

5Bk

$$2.1 \quad 4a^2 - 4ab + b^2 = (2a - b)^2$$

2Bk

$$2.2 \quad \frac{4x^2 - 8x}{(3x-1)} \cdot \frac{2(3x-1)}{8(3x-1)} = \frac{4x(x-2)}{8(3x-1)} = \frac{x}{2} = \frac{1}{2}x$$

4Bk

$$2.3 \quad \frac{x+2y}{(x+2)^2} - \frac{4y}{2(x^2+4x+4)x} - \frac{x-2y}{2(x+2)x} =$$

$$\frac{2(x+2y)x - 4y - (x-2y)(x+2)}{2(x+2)^2 x} =$$

$$\frac{2x^2 + 4xy - 4y - x^2 - 2x + 2xy + 4y}{2(x+2)^2} = \frac{-x^2 + 2xy + 4y}{2(x+2)^2}$$

5Bk

$$3.1 \quad A(2|-1), B(0|4)$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - (-1)}{0 - 2} = -\frac{5}{2}; \text{ weil } B(0|4) \Rightarrow t = 4$$

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

3Bk

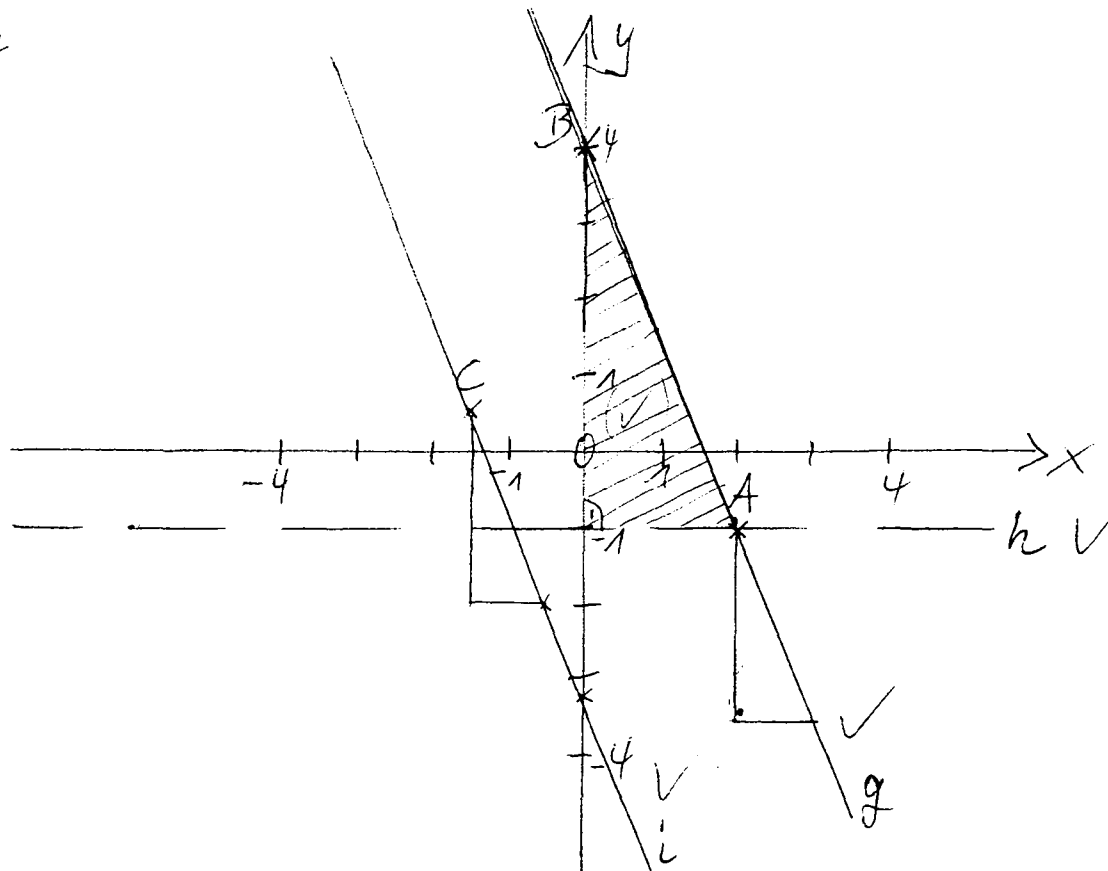
$$3.2 \quad h: y = -1, \text{ da } m = 0, \text{ wegen Parallelität zur } x\text{-Achse}$$

$$3.3 \quad C \text{ eingesetzt: } \frac{1}{2} = \left(-\frac{5}{2}\right) \cdot \left(-\frac{3}{2}\right) + t \Rightarrow t = -\frac{13}{4}$$

$$i: y = -\frac{5}{2}x - \frac{13}{4}$$

3Bk

3.4



3 Bx

3.5 $A = \frac{g \cdot h}{2} = \frac{5 \cdot 2}{2} \checkmark = \underline{\underline{5 [F\checkmark] \checkmark}}$

3 Bx

4.1 $f(10) = 1450 [l] \checkmark$
 $f(15) = 1200 [l] \checkmark$
 $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1450 - 1200}{10 - 15} \checkmark = \frac{250}{-5} = -50 \checkmark$

$$\begin{cases} m \cdot 10 + t = 1450 \\ m \cdot 15 + t = 1200 \end{cases}$$

$f(x) = -50x + t$; $1450 = -50 \cdot 10 + t$
 $t = 1950 \checkmark$

$f(x) = \underline{\underline{-50x + 1950 \checkmark}}$

5 Bx

4.2 $f(30) = -50 \cdot 30 + 1950 \checkmark = \underline{\underline{450 [l] \checkmark}}$

2 Bx

4.3 $0 = -50x + 1950 \checkmark$

$50x = 1950$

$x = \underline{\underline{39}}$ Nach 39 Minuten ist der 2 Bx Tank leer.

Wert

$\Sigma = 41 Bx$