

# Musterlös 1. SA - Mathe VK

## Teil I:

$$1.1) \left(\frac{1}{2} + \frac{2}{3} \cdot 2\right) : \frac{11}{6} = \left(\frac{3}{6} + \frac{8}{6}\right) \cdot \frac{6}{11} = 1 \quad (2BE)$$

$$1.2) -2 + \frac{5}{4} : \left(-\frac{5}{4} + \frac{5}{2}\right) = -2 + \frac{5}{4} : \frac{5}{4} = -2 + \frac{5}{4} \cdot \frac{4}{5} = -1 \quad (3BE)$$

$$2.1) -(x-2y) + (2x-y) \cdot \frac{1}{2} = -x + 2y + x - \frac{1}{2}y = \frac{3}{2}y \quad (2BE)$$

$$2.2) x(2+y)(-1+x) - 2(x^2 + \frac{1}{2}y) = (2x+xy)(-1+x) - 2x^2 - y = \\ -2x - xy + 2x^2 + x^2y - 2x^2 - y = x^2y - xy - 2x - y \quad (3BE)$$

$$3.1) (2x - 3y)^2 = 4x^2 - 12xy + 9y^2$$

$$3.2) \left(x + \frac{1}{2}y^2\right)^2 = x^2 + xy^2 + \frac{1}{4}y^4$$

$$3.3) (x-1)(x-1) = (x-1)^2 = x^2 - 2x + 1 \quad (6BE)$$

$$4.1) 4\left(\frac{1}{2}x + 2\right) = 6 - 2x$$

$$2x + 8 = 6 - 2x$$

$$x = -\frac{1}{2} \Rightarrow L = \left\{-\frac{1}{2}\right\} \quad (2BE)$$

$$4.2) 3x(2-3x) = x + x^2 - 5x(2x-1)$$

$$6x - 9x^2 = x + x^2 - 10x^2 + 5x$$

$$6x - 9x^2 = -9x^2 + 6x$$

$$0 = 0 \text{ w. A.} \Rightarrow L = \mathbb{R} \quad (3BE)$$

$$4.3) -2\left(x + \frac{1}{2}\right) = -4x + 2(x-1)$$

$$-2x - 1 = -4x + 2x - 2$$

$$-1 = -2 \text{ f. A.} \Rightarrow L = \{\} \quad (3BE)$$

$$5.1) b^2 = \left(\frac{a}{2}\right)^2 + a^2 = \frac{a^2}{4} + a^2 = \frac{a^2 + 4a^2}{4} = \frac{5}{4}a^2 \Rightarrow b = \sqrt{\frac{5}{4}}a \quad (3BE)$$

$$5.2) A = a^2 - \frac{1}{2} \cdot a \cdot \frac{a}{2} = a^2 - \frac{1}{4}a^2 = \frac{3}{4}a^2 \quad (3BE)$$

(Σ 30 BE)

# Musterlös 1. SA - Mathe VL

## Teil II:

$$1) \quad T(-1) = -\frac{5}{2} = -2,5 \\ T(2) = -\frac{13}{4} = -3,25$$

(3 BE)

$$2) \quad p_w = 1920,45 \text{ €}, \quad p_s = 10,5\%, \quad G = ?$$

$$G = \frac{1920,45 \cdot 100\%}{10,5\%} = 18290$$

Der ursprüngliche Preis des Autos war 18290 €

(3 BE)

$$3) \quad \alpha = 180^\circ - 40^\circ - 75^\circ = 65^\circ$$

$$a) \quad \sin \beta = \frac{h_c}{a} \Rightarrow h_c = 8 \cdot \sin 40^\circ = 5,14 \text{ cm}$$

$$b) \quad \sin \alpha = \frac{h_c}{b} \Rightarrow b = \frac{5,14}{\sin 65^\circ} = 5,67 \text{ cm}$$

(4 BE)

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(Σ 13 BE)