

1. SA Lösung

$$1a) (2a-b)(3b-a) - (2a-b)(b+3a) =$$

$$(6ab - 2a^2 - 3b^2 + ab) - (2ab + 6a^2 - b^2 - 3ab) =$$

$$(6ab - 2a^2 - 3b^2 + ab) - 2ab - 6a^2 + b^2 + 3ab =$$

$$8ab - 8a^2 - 2b^2 \checkmark$$

(4)

$$1b) (u-2v)(3)(u+2v) - 2(3u-v)^2$$

$$3(u^2 + 2uv - 2uv - 4v^2) - 2(9u^2 - 6uv + v^2) \checkmark$$

$$= 3u^2 - 12v^2 - 18u^2 + 12uv - 2v^2 \checkmark$$

$$= -15u^2 - 14v^2 + 12uv \checkmark$$

(4)

$$2a) (0,5)a(12x - 3b + c) = 6ax - (4,5)ab + \frac{1}{2}ac$$

$$b) 15b + 27(bc) - 3b^2 = (3b)(5 + 9c - b)$$

je 0,5

$$c) (25a^2) - (70ab) + 49b^2 = (5a - 7b)^2$$

(6)

$$d) (10r^2) + 180rs + 81s^2 = (10r + 9s)^2$$

$$3) 2(x+1)^2 - 24 = 3x - (1-x)$$

$$\Rightarrow 2(-3+1)^2 - 24 \stackrel{?}{=} 2(-3) - (1 - (-3)) \checkmark$$

$$\Rightarrow 2 \cdot 4 - 24 \stackrel{?}{=} (-6) - 4 \checkmark$$

$$-16 \neq -10 \rightarrow \text{keine Lösung} \checkmark$$

(3)

$$4) a) 3 + 8x^2 = 2(2x-3)^2 + 9$$

$$3 + 8x^2 = 2(4x^2 - 12x + 9) + 9 \checkmark$$

$$3 + 8x^2 = 8x^2 - 24x + 18 + 9 \quad | -22$$

$$-24 = -24x \checkmark$$

$$x = 1 \checkmark$$

$$L = \{1\} \checkmark$$

(3)

$$b) 3 - 2(x+3)(x+4) + 2(x-1)(x+1) = 0$$

$$3 - 2(x^2 + 3x + 4x + 12) + 2(x^2 - 1) = 0$$

$$\underline{3} - \underline{2x^2} - 14x - \underline{24} + \underline{2x^2} - \underline{2} = 0x$$

$$-23 - 14x = 0x$$

$$-23 = 14x \quad | : 14$$

$$x = -\frac{23}{14} \notin \mathbb{N}x \Rightarrow L = \emptyset \checkmark$$

(4)

$$5) a) A_s = A_g - 2A_\Delta \quad (\text{Jede } x)$$

$$A_s = 7,5^{2x} - 2 \cdot \frac{1}{2} 4,5^{2x} = 36 \text{ FE } x$$

$$\frac{36}{7,5^2} = 0,64 \Rightarrow 64\% \text{ sind getönt}$$

(3)

$$b) A = (x + 4,5)^2 - 2 \cdot \frac{1}{2} \cdot 4,5^2 x$$

$$= x^2 + 9x + 4,5^2 - 4,5^2 x$$

$$A(x) = x^2 + 9x x$$

(2)

$$6) \quad \begin{array}{lll} \text{unterer Rang} & \text{mittl.} & \text{oberer} \end{array}$$

$$\begin{array}{lll} x & 1,2x \checkmark & 1,2x - 2000 \checkmark \end{array}$$

$$\Rightarrow x + 1,2x + 1,2x - 2000 = 66000 \checkmark$$

$$3,4x = 68000$$

$$x = 20000 \checkmark$$

$$\Rightarrow \text{unterer Rang } 20000$$

$$\text{mitl. Rang } 24000 x$$

$$\text{oberer } 22000 x$$

(5)