

Musterlös Vorkurs 1. SA - Mathe

1) a) $(1 + 2^4 a)^2 = 1^4 + 4a + 4^4 a^2$ (28E)

b) $36 - 4x^2 = (6^2 - 2x)(6^2 + 2x)$ (28E)

c) $8x^4 - 24x^2y + 18y^2 = 2^4(2x^2 - 3y)^2$ (28E)

2) a) $2(x - \frac{1}{2})^2 - (\frac{3}{2}x - 2) = 2x^2 - 2x + \frac{1}{2} - \frac{3}{2}x + 2 = 2x^2 - \frac{5}{2}x + \frac{5}{2}$ (38E)

b) $\frac{4x^2y^2 - 4x^2z^2}{4x^2yz} : \frac{2y - z^2}{y} = \frac{y^2 - z^2}{yz} \cdot \frac{y}{2(y - z)} = \frac{y + z}{z^2}$ ✓ (38E)

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

$\checkmark 6 - 2x - 2x^2 + 1 = \checkmark 3x - 2x^2 + 2$

$-5x = -5 \quad \checkmark$

$x = 1 \quad \checkmark$

(48E)

b) $\checkmark (4x^2 - 1) \cdot 3 = -2(4x^2 - 12x + 9) + 20x^2$

$12x^2 - 3 = -8x^2 + 24x - 18 + 20x^2$

$-3 = 24x - 18 \quad \checkmark \quad \checkmark$

$24x = 15$

$x = \frac{15}{24} = \frac{5}{8} \quad \checkmark$

(58E)

4.1) $m = \frac{1+2}{2+4} = \frac{1}{2} \quad \checkmark$

$1 = \frac{1}{2} \cdot 2 + t$

$t = 0 \quad \checkmark \Rightarrow g(x) = \frac{1}{2}x \quad \checkmark$

(78E)

4.2) $m_w = m_f = -1 \quad \checkmark$

$-4 = -6 + t$

$t = 2 \quad \checkmark \Rightarrow h(x) = -x + 2 \quad \checkmark$

(88E)

5.1) g: $\frac{1}{2}x = 0$
 $x = 0$

h: $-x + 2 = 0$
 $x = 2$

5.2) $\frac{1}{2}x = -x + 2$

$\frac{3}{2}x = 2 \quad \checkmark$

$x = \frac{4}{3} \quad \checkmark$

$g(\frac{4}{3}) = \frac{2}{3} \quad \checkmark$

$SP(\frac{4}{3} | \frac{2}{3}) \quad \checkmark$

(48E)