

Repetitions Termumformungen

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1 Repetitionsübung Termumformungen/ Potenzen/ Wurzeln

Wenn nichts anderes vermerkt, sollen die Terme vereinfacht oder ausgerechnet werden.

$$1. -[2a - b \cdot (a - 2b) + ab] = -[2a - ab + 2b^2 + ab] = -2a - 2b^2$$

$$2. e \cdot (3e^2 - 4) - 2 \cdot (e^3 - e^2 - 2e) = 3e^3 - 4e - 2e^3 + 2e^2 + 4e = e^3 + 2e^2$$

$$3. \frac{-2x^2 - 4xy - 2y^2}{x + y} = \frac{-2 \cdot (x^2 + 2xy + y^2)}{x + y} = \frac{-2 \cdot (x + y) \cdot (x + y)}{(x + y)} = -2x - 2y$$

$$4. \frac{(a^2 - 1) \cdot (2 - a) \cdot (-a^2)}{a \cdot (a - 2) \cdot (a + 1)} = \frac{(a + 1) \cdot (a - 1) \cdot (2 - a) \cdot (-1) \cdot a^2}{a \cdot (-1) \cdot (2 - a) \cdot (a + 1)} = a \cdot (a - 1)$$

$$5. (s - t)^3 = 1s^3 - 3s^2 \cdot t + 3st^2 - t^3$$

Nr. 6 – 12 : faktorisieren

$$6. ac - bd + bc - ad = a \cdot (c - d) + b(c - d) = (c - d) \cdot (a + b)$$

$$7. x^3 - x^2 + y^2 \cdot (x - 1) = x^2 \cdot (x - 1) + y^2 \cdot (x - 1) = (x - 1) \cdot (x^2 + y^2)$$

$$8. 4x^2 - 36y^2 = (2x + 6y) \cdot (2x - 6y)$$

$$9. -9u^2 + 49z^2 = 49z^2 - 9u^2 = (7z - 3u) \cdot (7z + 3u)$$

$$10. a^2 - 9a + 20 = (a - 5) \cdot (a - 4)$$

$$11. x^2 + x - 42 = (x + 7) \cdot (x - 6)$$

$$12. z^4 - 1 = (z^2 + 1) \cdot (z^2 - 1) = (z^2 + 1) \cdot (z + 1) \cdot (z - 1)$$

Nr. 13 – 16 : hier ist kürzen angesagt

$$13. \frac{ax + bx}{ay + by} = \frac{x \cdot (a + b)}{y \cdot (a + b)} = \frac{x}{y}$$

$$14. \frac{a^2 + 5a - 24}{a^2 - 5a + 6} = \frac{(a + 8) \cdot (a - 3)}{(a - 2) \cdot (a - 3)} = \frac{a + 8}{a - 2}$$

$$15. \frac{rs + r + s + 1}{rt + t + r + 1} = \frac{r \cdot (s + 1) + 1 \cdot (s + 1)}{t \cdot (r + 1) + 1 \cdot (r + 1)} = \frac{(s + 1) \cdot (r + 1)}{(r + 1) \cdot (t + 1)} = \frac{s + 1}{t + 1}$$

$$16. \frac{p^3 - 2p^2 + p}{pq - q} = \frac{p \cdot (p^2 - 2p + 1)}{q \cdot (p - 1)} = \frac{p \cdot (p - 1) \cdot (p - 1)}{q \cdot (p - 1)} = \frac{p \cdot (p - 1)}{q}$$

$$17. \frac{6a}{5c} - \frac{11a}{15c} = \frac{3 \cdot 6a}{3 \cdot 5c} - \frac{11a}{15c} = \frac{18a - 11a}{15} = \frac{7a}{15}$$

$$18. \frac{w^2}{w - 2} - w = \frac{w^2}{w - 2} - w \cdot \frac{(w - 2)}{(w - 2)} = \frac{w^2 - w^2 + 2w}{w - 2} = \frac{2w}{w - 2}$$

$$19. \frac{a}{a + b} + \frac{b}{a - b} = \frac{a}{(a + b)} \cdot \frac{(a - b)}{(a - b)} + \frac{b}{(a - b)} \cdot \frac{(a + b)}{(a + b)} = \frac{a^2 - ab + ab + b^2}{(a + b) \cdot (a - b)} = \frac{a^2 + b^2}{a^2 - b^2}$$

$$20. \frac{3b^2 - 3bc}{c} \div (6b - 6c) = \frac{3b(b - c)}{c} \cdot \frac{1}{6 \cdot (b - c)} = \frac{3b}{6c} = \frac{b}{2c}$$