

# Lösungen Test O2

Spur II

1. a)  $(a + \frac{1}{3})^2$       b)  $(5x - y)^2$   
c)  $(1.2y + 0.8z)(1.2y - 0.8z)$       d)  $(\sqrt{x} + \sqrt{2})(\sqrt{x} - \sqrt{2})$
2. a)  $7m^3(4 - 9m^2 + 19m)$       b)  $13x(5x - 1)$   
c)  $(a - b)(2x + 1)$
3. a)  $x(x + y) + z(x + y) = (x + y)(x + z)$   
b)  $3x(2z - 1) + 4a(2z - 1) = (2z - 1)(3x + 4a)$
4. a)  $L = \{-3, 8\}$       b)  $L = \{0, -\sqrt{3}, 5.4\}$
5. a)  $\frac{x-3}{x+3}$       b)  $\frac{5}{2a-10}$   
c)  $\frac{x-2}{2}$
6. a)  $x(x + 5) = 0$      $L = \{-5, 0\}$     b)  $(x + 4)^2 = 0$      $L = \{-4\}$   
c)  $(x + 3)(x + 7)$      $L = \{-3, -7\}$     d)  $5x(x^2 - 3) = 0$      $L = \{-\sqrt{3}, 0, \sqrt{3}\}$

# Lösungen Test O2

Spur III

1. a)  $x^2 + xy + xz + yz$       b)  $z^2 - 25$       c)  $100x^4 - 2000x^3 + 10\,000x^2$
2. a)  $\frac{x^2}{4} + x + 1^2$       b)  $4 - 2x + \frac{x^2}{4}$       c)  $0.001a - 0.0101ab + 0.001b^2$
3. a)  $a - b$       b)  $\frac{2}{x^2y^2} - 25$       c)  $\frac{a^2}{9} - \frac{ab}{3} + \frac{b^2}{4}$
4.  $(n + 1)^2 + (n - 1)^2 = 100 \Rightarrow n = 7$
5. a)  $7x^7(2 - 3x + 7x^2)$       b)  $6p^4q^4rs^7(6p^3s^3 + 7q^3r^9)$   
c)  $4xy^2(x - 2y + 3xy)$       d)  $9u^9v^9(u^{90} - 11v^{90})$
6. a)  $-1(1 - b + 2c) = -(1 - b + 2c)$   
b)  $\frac{1}{3}(a - 3b + 2c + 9d)$
7. a)  $(2x + 1)(a + 1)$       b)  $(x + 1)(a + b)$       c)  $(x + a)(x - b)$
8. a)  $(r - s)^2$       b)  $(2r - s)(2r + s)$       c)  $(2r + 1)^2$
9. a)  $(p + 6q)^2$       b)  $(\frac{r}{2} - \frac{s}{2})^2$       c)  $(r - \frac{1}{r})^2$
10. a)  $(u - \sqrt{5})(u + \sqrt{5})$       b)  $(w - \sqrt{-v})(w + \sqrt{-v})$       c)  $a^2b^2(2a + 3b)^2$
11. a)  $\frac{a+b}{2}$       b)  $\frac{x(2xz^4 - 3y^2)}{4y^2z^2}$   
c)  $\frac{1}{c+1}$       d)  $\frac{x+y}{x-y}$
12. a)  $L = \{0, 1\}$       b)  $L = \{-1, 2\}$
13. a)  $x(x - 100) = 0 \Rightarrow L = \{0, 100\}$   
b)  $(x - 10)(x - 1) = 0 \Rightarrow L = \{1, 10\}$   
c)  $10x(x - 10) = 0 \Rightarrow L = \{0, 10\}$