

# Lösungen zu S 19/4/5/6/7

4. a)  $(x-4) \cdot (x-8) = (x-2)(x-6)$       c)  $(8+y)(y-3) = (6+y)(y-4)$   
 $x^2 - 12x + 32 = x^2 - 8x + 12 \quad | -x^2$        $y^2 + 5y - 24 = y^2 + 2y - 24 \quad | -y^2$   
 $-12x + 32 = -8x + 12 \quad | +12x \quad | -12$        $5y - 24 = 2y - 24 \quad | +2y + 24$   
 $20 = 4x \quad | :4$        $3y = 0$        $1:3$   
 $5 = x$        $y = 0$   
 $\mathbb{L} = \{5\}$        $\mathbb{L} = \{0\}$

5. a)  $(x-3)(x+3) = (x-5)^2$       c)  $(s-10)^2 = (s-5) \cdot (s+5)$   
 $x^2 - 9 = x^2 - 10x + 25 \quad | -x^2$        $s^2 - 20s + 100 = s^2 - 25 \quad | -s^2$   
 $-9 = -10x + 25 \quad | +10x + 9$        $-20s + 100 = -25 \quad | +20s + 25$   
 $10x = 34 \quad | :10$        $125 = 20s \quad | :20$   
 $x = 3.4$        $\frac{35}{4} = s$   
 $\mathbb{L} = \{3.4\}$  oder  $\mathbb{L} = \{\frac{34}{10}\}$        $\mathbb{L} = \{\frac{35}{4}\}$

6. a)  $(x-2)(2x-3) + (3x-1)(4x-6) - (2x-5)(7x+9) - 39 = 0$   
 $2x^2 - 3x - 4x + 6 + 12x^2 - 18x - 4x + 6 - 14x^2 - 18x + 35x + 45 - 39 = 0$   
 $-22x + 18 = 0 \quad | +22x$   
 $18 = 22x \quad | :22$   
 $\frac{9}{11} = x \Rightarrow \mathbb{L} = \{\frac{9}{11}\}$

7. a)  $(x + \frac{2}{3}x) - \frac{1}{3} \cdot (x + \frac{2}{3}x) = 10$       c)  $\frac{x-1}{3} - \frac{x}{3} = \frac{x-2}{3} + 1\frac{1}{6}$   
 $x + \frac{2}{3}x - \frac{1}{3}x - \frac{2}{9}x = 10$        $\frac{1}{3}x - \frac{1}{3} - \frac{1}{3}x = \frac{1}{3}x - \frac{2}{3} + \frac{7}{6}$   
 $\frac{10}{9}x = 10 \quad | \cdot \frac{9}{10}$        $-\frac{1}{3} = \frac{1}{3}x + \frac{1}{2} \quad | -\frac{1}{2}$   
 $x = 9$        $-\frac{5}{6} = \frac{1}{3}x \quad | \cdot 3$   
 $\mathbb{L} = \{9\}$        $-\frac{5}{3} = x \Rightarrow \mathbb{L} = \{-\frac{5}{3}\}$

e)  $(\frac{1}{2}x + 6)(\frac{1}{6}x - 2) = 0$   
 $\frac{1}{12}x^2 - x + x - 12 = 0 \quad | +12$   
 $\frac{1}{12}x^2 = 12 \quad | \cdot 12$   
 $x^2 = 144$   
 $\mathbb{L} = \{-12, 12\}$

g)  $\frac{6+x}{5} + \frac{5+x}{4} + \frac{3+x}{2} = 1$   
 $\frac{6}{5} + \frac{1}{5}x + \frac{5}{4} + \frac{1}{4}x + \frac{3}{2} + \frac{1}{2}x = 1$   
 $\frac{79}{20} + \frac{79}{20}x = \frac{20}{20} \quad | -\frac{79}{20}$   
 $\frac{19}{20}x = -\frac{59}{20} \quad | \cdot \frac{20}{19}$   
 $x = -\frac{59}{19}$   
 $\mathbb{L} = \{-\frac{59}{19}\}$