

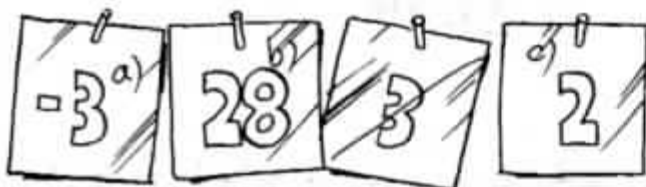
14: Produkt von Summen in Gleichungen

1.

a) $(x + 3)(x + 5) = x^2 - 9$ $x = -3$

b) $(2x + 7)(x - 3) = 2x^2 + 7$ $x = 28$

c) $(x - 8)(3x - 5) = 3x^2 - 18$ $x = 2$



2.

a) $(x - 7)(x + 3) = (x - 5)(x + 2)$ $x = -11$

b) $(8 + x)(x + 1) = (x - 4)(x - 2)$ $x = 0$

c) $(8x - 2)(3x + 5) = (6x - 1)(4x + 6)$ $x = 12$

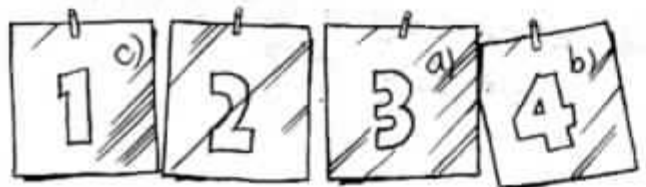


3.

a) $(2x + 3)^2 = 4x^2 + 45$ $x = 3$

b) $(x - 4)^2 = x^2 - 16$ $x = 4$

c) $(5x - 7)^2 = 25x^2 - 21$ $x = 1$

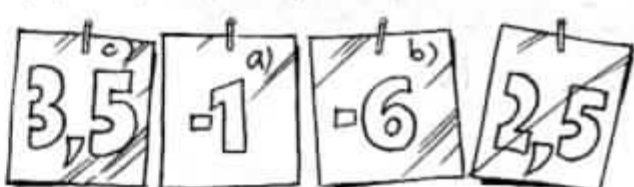


4.

a) $(x - 5)^2 = (x + 7)^2$ $x = -1$

b) $(x + 4)^2 = (x + 8)^2$ $x = -6$

c) $(x - 3)^2 = (x - 4)^2$ $x = 3,5$

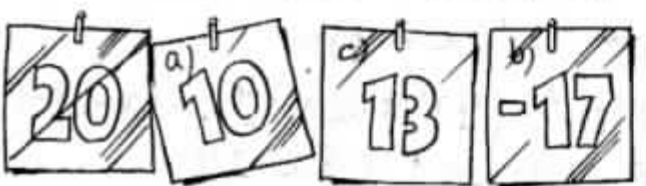


5.

a) $(x + 6)(x - 6) = (x - 2)^2$ $x = 10$

b) $(x + 8)(x - 8) = (x + 2)^2$ $x = -17$

c) $(x + 12)(x - 12) = (x - 8)^2$ $x = 13$



6.

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

b) $5 + (x + 6)^2 = x(x - 4) - 7$ $x = -3$

c) $4x^2 - (2x + 3)^2 = 4(2x - 7) - 1$ $x = 1$



7.

a) $(x - 6)^2 + (x + 4)^2 = 2x^2$ $x = 13$

b) $(x + 5)^2 + (x - 3)^2 = 2x^2 - 2$ $x = -9$

c) $(x - 4)^2 + (x + 7)^2 = 2x^2 - 1$ $x = -11$



8.

a) $(x + 5)^2 - (x + 7)^2 = 24$ $x = -12$

b) $(x + 4)^2 - (x + 3)(x - 3) = 89$ $x = 8$

c) $(x + 6)(x - 6) - (x - 5)^2 = 9$ $x = 7$



$$1) a) \Leftrightarrow x^2 + 8x + 15 = x^2 - 9$$

$$\Leftrightarrow 8x = -24$$

$$b) \Leftrightarrow 2x^2 + x - 21 = 2x^2 + 7$$

$$\Leftrightarrow x = 28$$

$$c) \Leftrightarrow 3x^2 - 29x + 40 = 3x^2 - 18$$

$$\Leftrightarrow -29x = -58$$

$$2) a) \Leftrightarrow x^2 - 4x - 21 = x^2 - 3x - 10$$

$$\Leftrightarrow -x = 11$$

$$b) \Leftrightarrow x^2 + 9x + 8 = x^2 - 6x + 8$$

$$\Leftrightarrow 15x = 0$$

$$c) \Leftrightarrow 24x^2 + 34x - 10$$

$$= 24x^2 + 32x - 6 \quad | -32x + 6$$

$$\Leftrightarrow 2x = 4$$

$$3) \Leftrightarrow 4x^2 + 12x + 9 = 4x^2 + 45$$

$$\Leftrightarrow 12x = 36$$

$$b) \Leftrightarrow x^2 - 8x + 16 = x^2 - 16$$

$$\Leftrightarrow -8x = -32$$

$$c) \Leftrightarrow 25x^2 - 70x + 49 = 25x^2 - 21$$

$$\Leftrightarrow -70x = -70$$

$$4) a) \Leftrightarrow x^2 - 10x + 25 = x^2 + 14x + 49$$

$$\Leftrightarrow -24x = 24$$

$$b) \Leftrightarrow x^2 + 8x + 16 = x^2 + 16x + 64$$

$$\Leftrightarrow -8x = 48$$

$$c) \Leftrightarrow x^2 - 6x + 9 = x^2 - 8x + 16$$

$$\Leftrightarrow 2x = 7$$

$$5) a) \Leftrightarrow x^2 - 36 = x^2 - 4x + 4$$

$$\Leftrightarrow -40 = -4x$$

$$b) \Leftrightarrow x^2 - 64 = x^2 + 4x + 4$$

$$\Leftrightarrow -68 = 4x$$

$$c) \Leftrightarrow x^2 - 144 = x^2 - 16x + 64$$

$$\Leftrightarrow -208 = -16x$$

$$6) \Leftrightarrow x^2 - (x^2 - 6x + 9) = 3x + 3$$

$$\Leftrightarrow 6x - 9 = 3x + 3$$

$$\Leftrightarrow 3x = 12$$

$$b) \Leftrightarrow x^2 + 12x + 41 = x^2 - 4x - 7$$

$$\Leftrightarrow 16x = 48$$

$$c) \Leftrightarrow 4x^2 - (4x^2 + 12x + 9) = 8x - 28 - 1$$

$$\Leftrightarrow -12x - 9 = 8x - 29$$

$$\Leftrightarrow -20x = -20$$

$$7) \Leftrightarrow x^2 - 12x + 36 + x^2 + 8x + 16 = 2x^2$$

$$\Leftrightarrow -4x + 52 = 0$$

$$8) \Leftrightarrow x^2 + 10x + 25 - x^2 - 14x - 49 = 24$$

$$\Leftrightarrow -4x - 24 = 24 \Leftrightarrow -4x = 48$$

$$b) \Leftrightarrow x^2 + 10x + 25 + x^2 - 6x + 9 = 2x^2 - 2$$

$$\Leftrightarrow 4x + 34 = -2 \Leftrightarrow 4x = -36$$

$$c) \Leftrightarrow x^2 - 8x + 16 + x^2 + 14x + 49 = 2x^2 - 1$$

$$\Leftrightarrow 6x + 65 = -1 \Leftrightarrow 6x = -66$$

$$b) \Leftrightarrow x^2 + 8x + 16 - (x^2 - 9) = 89$$

$$\Leftrightarrow 8x + 25 = 89 \Leftrightarrow 8x = 64$$

$$c) \Leftrightarrow x^2 - 36 - (x^2 - 10x + 25) = 9$$

$$\Leftrightarrow 10x - 61 = 9 \Leftrightarrow 10x = 70$$