REŠITVE

1. a) $3a - 4 - 6a + 13 = -3a + 11$

b) $6x - (-x + 12) + 2 = 6x + x - 12 + 2 = 7x - 10$

c) $(3-x)(3+x) - 2(2x-4) = 9 - x^2 - 4x + 8 = -x^2 - 4x + 17$

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

2. a) $(x+5)^2 = x^2 + 10x + 25$ b) $(2x-8)^2 = 4x^2 - 32x + 64$ c) $(6x + \frac{2}{3})^2 = 36x^2 + 8x + \frac{4}{9}$

3. a) $(2y + \underline{9})^2 = \underline{4y^2} + \underline{36y} + 81$ b) $\frac{x^2}{4} - 9y^2 = (\frac{x}{2} + 3y)(\frac{x}{2} - 3y)$

4. $(6x-2)(6x+2) - (5-6x)^2 =$ $\boxed{x = -4}$

$= 36x^2 - 4 - (25 - 60x + 36x^2) =$

$= 36x^2 - 4 - 25 + 60x - 36x^2 =$

$= 60x - 29 =$

$= 60 \cdot (-4) - 29 =$

$= -240 - 29 =$

$= -269$

5. a) $42a - 49b = 7 \cdot (6a - 7b)$

b) $15a^3b - 25a^2b^2 + 5ab = 5ab(3a^2 - 5ab + 1)$

c) $x^2 - 121 = (x - 11)(x + 11)$

č) $y^2 - 10y + 25 = (y - 5)^2$

6. a) $\frac{8ab^4}{24a^3b^5} = \frac{8ab^4 \cdot 1}{24a^3b^5 \cdot 3a^2b} = \frac{1}{3a^2b}$ b) $\frac{a^2-4}{5a-10} = \frac{(a-2)(a+2)}{5(a-2)} = \frac{a+2}{5}$

c) $\frac{5a + 15b}{(a+3b)^2} = \frac{5(a+3b) \cdot 1}{(a+3b)(a+3b) \cdot 1} = \frac{5}{a+3b}$

7. $\frac{x-1}{3x+6}$; a) $3x + 6 = 0$ Ulomek nima pomena za $x = -2$
$3x = -6$
$x = -2$

b) $\frac{x-1}{3x+6} \Rightarrow \frac{2-1}{3 \cdot 2 + 6} = \frac{1}{6+6} = \frac{1}{12}$

8. a) $\frac{x}{5} = 8$ $\mathbb{L} = \{40\}$

b) $3(x+1) = 3x+3$ $\mathbb{L} = \mathbb{R}$

$3x+3 = 3x+3$

$3x - 3x = 3 - 3$

$0x = 0$ id.

c) $x^2 - 64 = 0$ $\mathbb{L} = \{8, -8\}$

$(x-8)(x+8) = 0$

d) $(x-7)(x-3) = 0$ $\mathbb{L} = \{7, 3\}$

9. A. $x(x-1) = x^2 - x$

$x^2 - x = x^2 - x$

$x^2 - x^2 - x + x = 0$

$0x = 0$ $\mathbb{L} = \mathbb{R}$

B. $2x = x + 8$

$2x - x = 8$

$x = 8$

$\mathbb{L} = \{8\}$

C. $x = 2x$

$x - 2x = 0$

$-x = 0$

$x = 0$ $\mathbb{L} = \{0\}$

D. $7x = 7x + 3$

$7x - 7x = 3$

$0x = 3$

$\mathbb{L} = \{\}$

Enačba A je identična, enačba D pa nerešljiva.

10. a) $17 - 5x = 33 - 13x$

$-5x + 13x = -17 + 33$

$8x = 16 \mid :8$

$x = \frac{16}{8}$

$x = 2$

L: $17 - 5 \cdot x =$

$= 17 - 5 \cdot 2 =$

$= 17 - 10$

$= 7$

D: $33 - 13x =$

$= 33 - 13 \cdot 2 =$

$= 33 - 26 =$

$= 7$

b) $x = \frac{x}{5} + 12 \mid \cdot 5$

$x \cdot 5 = \frac{x \cdot 5^1}{5 \cdot 1} + 12 \cdot 5$

$5x = x + 60$

$5x - x = 60$

$4x = 60 \mid :4$

$x = \frac{60}{4}$

$x = 15$

L: 15

D: $\frac{x}{5} + 12 =$

$= \frac{15}{5} + 12 =$

$= 3 + 12 =$

$= 15$

c) $\frac{x}{4} - 2 = \frac{4x}{3} \mid \cdot 12$

$\frac{x \cdot 12^3}{4} - 2 \cdot 12 = \frac{x \cdot 12^4}{3}$

$3x - 24 = 4x$

$3x - 4x = 24$

$-x = 24$

$x = -24$

L: $\frac{x}{4} - 2 =$

$= \frac{-24}{4} - 2 =$

$= -6 - 2 =$

$= -8$

D: $\frac{4x}{3} =$

$= \frac{-24}{3} =$

$= -8$

d) $6(7-2x) = 3-(1+2x)$

$42-12x = 3-1-2x$

$-12x+2x = -42+3-1$

$-10x = -40 \mid :(-10)$

$x = \frac{-40}{-10}$

$x = 4$

L: $6(7-2x) =$

$= 6\cdot(7-2\cdot 4) =$

$= 6\cdot(7-8) =$

$= 6\cdot(-1) =$

$= -6$

D: $3-(1-2x) =$

$= 3-(1-2\cdot(-4)) =$

$= 3-(1+8) =$

$= 3-9 =$

$= -6$

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

$x^2+6x+9-1 = x^2+2x-4x-8$

$x^2+6x-x^2-2x+4x = -9+1-8$

$8x = -16 \mid :8$

$x = \frac{-16}{8}$

$x = -2$

L: $(x+3)^2-1 =$

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

$= 1^2-1 =$

$= 1-1 =$

$= 0$

D: $(x-4)(x+2) =$

$= (-2-4)(-2+2) =$

$= (-6)\cdot 0 =$

$= 0$

b) $\frac{x+2}{4} - \frac{x-1}{8} = 1 \mid \cdot 8$

$\frac{(x+2)\cdot 8^2}{4} - \frac{(x-1)\cdot 8^1}{8} = 1\cdot 8$

$2(x+2)-(x-1) = 8$

$2x+4-x+1 = 8$

$2x-x = -4-1+8$

$x = 3$

L: $\frac{x+2}{4} - \frac{x-1}{8} =$

$= \frac{3+2}{4} - \frac{3-1}{8} =$

$= \frac{5}{4} - \frac{2\cdot 1}{8\cdot 1} =$

$= \frac{5}{4} - \frac{1}{4} =$

$= 1$

D: 1

12.a) $\frac{5x}{6x^3}\cdot\frac{18x}{45} = \frac{5x\cdot 18x\cdot 1\cdot 3}{6x^3\cdot 45\cdot 9\cdot 1\cdot 3x^2} = \frac{1}{3x^2}$

b) $\frac{x+7}{3y}\cdot\frac{y^5}{3x+21} = \frac{(x+7)\cdot y^5\cdot y^4}{3y\cdot 3\cdot(x+7)} = \frac{y^4}{9}$

c) $\frac{1}{4a}+\frac{11}{6a}-\frac{1}{3a} = \frac{3}{12a}+\frac{22}{12a}-\frac{4}{12a} = \frac{21\cdot 1}{12a\cdot 1} = \frac{7}{4a}$

d) $\frac{2x}{x-1} : \frac{8xy}{x^2-1} = \frac{2x\cdot(x-1)(x+1)}{(x-1)\cdot 8xy\cdot 4} = \frac{x+1}{4y}$

e) $\frac{1}{a+2}+\frac{3}{a+3} = \frac{1\cdot(a+3)}{(a+2)(a+3)}+\frac{3(a+2)}{(a+2)(a+3)} = \frac{a+3+3a+6}{(a+2)(a+3)} = \frac{4a+9}{(a+2)(a+3)}$

f) $\frac{x}{5}-\frac{2-x^2}{2x} = \frac{x\cdot 5x}{10x}-\frac{(2-x^2)\cdot 5}{10x} = \frac{5x^2-(10-5x^2)}{10x} = \frac{5x-10+5x}{10x} =$

$= \frac{10x-10}{10x} = \frac{10(x-1)\cdot 1}{10x\cdot 1} = \frac{x-1}{x}$

g) $\frac{b+3}{b} + \frac{1-a}{a} = \frac{(b+3)\cdot a}{ab} + \frac{(1-a)\cdot b}{ab} = \frac{ab+3a+b-ab}{ab} = \frac{3a+b}{ab}$

h) $\frac{4x}{x-1} : \frac{8xy}{x^2-1} = \frac{4x \cdot (x-1)(x+1)}{(x-1)\cdot 8xy \cdot 2} = \frac{x+1}{2y}$

1. Skrči izraze!

a) $3a - 4 - 6a + 13 =$
b) $6x - (-x + 12) + 2 =$
c) $(3 - x)(3 + x) - 2(2x - 4) =$
d) $(x + 1)(x - 2)(x + 2) =$

2. Kvadriraj dvočlenika!

a) $(x + 5)^2 =$ b) $(2x - 8)^2 =$ c) $\left(6x + \frac{2}{3}\right)^2 =$

3. Dopolni.

a) $(2y + \_\_\_\_)^2 = \_\_\_\_\_ + \_\_\_\_\_ + 81$

b) $\frac{x^2}{4} - \_\_\_\_ = (\_\_\_\_ + 3y)(\_\_\_\_ - 3y)$

4. Skrči izraz in izračunaj vrednost, če je $x = -4$.

$(6x - 2)(6x + 2) - (5 - 6x)^2 =$

5. Zapiši kot produkt (razstavi ali izpostavi)!

a) $42a - 49b =$
b) $15a^3b - 25a^2b^2 + 5ab =$
c) $x^2 - 121 =$
č) $y^2 - 10y + 25 =$

6. Okrajšaj ulomke:

a) $\frac{8ab^4}{24a^3b^5} =$ *b*) $\frac{a^2 - 4}{5a - 10} =$ *c*) $\frac{5a + 15b}{(a + 3b)^2}$

7. Za ulomek $\frac{x-1}{3x+6}$ določi,

a) za kateri x ulomek nima pomena: _____

b) Za $x = 2$ izračunaj vrednost danega ulomka. _____

8. Na črto zapiši množico rešitev danih enačb:

a) $\frac{x}{5} = 8$ _____ c) $x^2 - 64 = 0$ _____

b) $3(x + 1) = 3x + 3$ _____ d) $(x - 7)(x - 3) = 0$ _____

9. Dane so enačbe:

A. $x(x - 1) = x^2 - x$ **B.** $2x = x + 8$ **C.** $x = 2x$ **D.** $7x = 7x + 3$

DOPOLNI:

Enačba _____ je identična, enačba _____ pa nerešljiva.

10. Reši enačbe in naredi preizkus!

a) $17 - 5x = 33 - 13x$

b) $x = \frac{x}{5} + 12$

c) $\frac{x}{4} - 2 = \frac{x}{3}$

d) $6(7 - 2x) = 3 - (1 + 2x)$

11. Reši enačbi: (preizkus ni obvezen!)

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

b) $\frac{x+2}{4} - \frac{x-1}{8} = 1$

12. Izračunaj, rezultati morajo biti okrajšani !

a) $\frac{5x}{6x^3} \cdot \frac{18x}{45} =$

b) $\frac{x+7}{3y} \cdot \frac{y^5}{3x+21} =$

c) $\frac{1}{4a} + \frac{11}{6a} - \frac{1}{3a} =$

d) $\frac{2x}{x-1} : \frac{8xy}{x^2-1} =$

e) $\frac{1}{a+2} + \frac{3}{a+3} =$

f) $\frac{x}{5} - \frac{2-x^2}{2x} =$

g) $\frac{b+3}{b} + \frac{1-a}{a} =$

d) $\frac{4x}{x-1} : \frac{8xy}{x^2-1} =$