

Rastavi na faktore koristeći se formulom za razliku kvadrata

38. $a^2 - b^2 = (a - b) \cdot (a + b)$

1) $x^2 - 9 = x^2 - 3^2 = (x - 3)(x + 3)$

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

3) $x^2 - y^2 = (x - y)(x + y)$

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

5) $49 - a^2 = 7^2 - a^2 = (7 - a)(7 + a)$

6) $81 - b^2 = 9^2 - b^2 = (9 - b)(9 + b)$

7) $4x^2 - 1 = 2^2 \cdot x^2 - 1^2 = (2x)^2 - 1^2 = (2x - 1)(2x + 1)$

8) $1 - 9y^2 = 1^2 - 3^2 \cdot y^2 = 1^2 - (3y)^2 = (1 - 3y)(1 + 3y)$

9) $25y^2 - 144 = 5^2 \cdot y^2 - 12^2 = (5y)^2 - 12^2 = (5y - 12)(5y + 12)$

10) $9x^2 - 16 = 3^2 \cdot x^2 - 4^2 = (3x)^2 - 4^2 = (3x - 4)(3x + 4)$

11) $x^2 - 16y^2 = x^2 - 4^2 \cdot y^2 = x^2 - (4y)^2 = (x - 4y)(x + 4y)$

12) $4x^2 - 9y^2 = 2^2 \cdot x^2 - 3^2 \cdot y^2 = (2x)^2 - (3y)^2 = (2x - 3y)(2x + 3y)$

13) $16a^2 - 49b^2 = 4^2 \cdot a^2 - 7^2 \cdot b^2 = (4a)^2 - (7b)^2 = (4a - 7b)(4a + 7b)$

14) $25x^2 - 49y^2 = 5^2 \cdot x^2 - 7^2 \cdot y^2 = (5x)^2 - (7y)^2 = (5x - 7y)(5x + 7y)$

15) $144a^2 - 81b^2 = 12^2 \cdot a^2 - 9^2 \cdot b^2 = (12a)^2 - (9b)^2 = (12a - 9b)(12a + 9b)$

16) $225a^2b^2 - 289c^2 = 15^2 \cdot a^2 \cdot b^2 - 17^2 \cdot c^2 = (15ab)^2 - (17c)^2 = (15ab - 17c)(15ab + 17c)$

17) $169x^2 - 196y^2 = 13^2 \cdot x^2 - 14^2 \cdot y^2 = (13x)^2 - (14y)^2 = (13x - 14y)(13x + 14y)$

38.

$$18) \quad x^2 y^2 - 225 = x^2 \cdot y^2 - 15^2 = (xy)^2 - 15^2 = (xy - 15)(xy + 15)$$

$$19) \quad 0.64x^2 - 0.25 = 0.8^2 \cdot x^2 - 0.5^2 = (0.8x)^2 - 0.5^2 = (0.8x - 0.5)(0.8x + 0.5)$$

$$20) \quad 0.09x^2 - 0.49y^2 = 0.3^2 \cdot x^2 - 0.7^2 \cdot y^2 = (0.3x)^2 - (0.7y)^2 = (0.3x - 0.7y)(0.3x + 0.7y)$$

$$21) \quad 0.09a^2 - 2.25b^2 = 0.3^2 \cdot a^2 - 1.5^2 \cdot b^2 = (0.3a)^2 - (1.5b)^2 = (0.3a - 1.5b)(0.3a + 1.5b)$$

$$22) \quad 1.69a^2 - 2.89b^2 = 1.3^2 \cdot a^2 - 1.7^2 \cdot b^2 = (1.3a)^2 - (1.7b)^2 = (1.3a - 1.7b)(1.3a + 1.7b)$$

$$23) \quad 1.69a^2 b^2 - 2.89c^2 = 1.3^2 \cdot a^2 \cdot b^2 - 1.7^2 \cdot c^2 = \\ = (1.3ab)^2 - (1.7c)^2 = (1.3ab - 1.7c)(1.3ab + 1.7c)$$

$$24) \quad 2.56a^2 - 3.61b^2 c^2 = 1.6^2 \cdot a^2 - 1.9^2 \cdot b^2 \cdot c^2 = \\ = (1.6a)^2 - (1.9bc)^2 = (1.6a - 1.9bc)(1.6a + 1.9bc)$$

$$25) \quad \frac{1}{4}x^2 - 9 = \frac{1^2}{2^2} \cdot x^2 - 3^2 = \left(\frac{1}{2}x\right)^2 - 3^2 = \left(\frac{1}{2}x - 3\right)\left(\frac{1}{2}x + 3\right)$$

$$26) \quad x^2 - \frac{25}{36} = x^2 - \frac{5^2}{6^2} = x^2 - \left(\frac{5}{6}\right)^2 = \left(x - \frac{5}{6}\right)\left(x + \frac{5}{6}\right)$$

$$27) \quad \frac{4}{9}x^2 - \frac{1}{16} = \frac{2^2}{3^2} \cdot x^2 - \frac{1^2}{4^2} = \left(\frac{2}{3}\right)^2 \cdot x^2 - \left(\frac{1}{4}\right)^2 = \left(\frac{2}{3}x\right)^2 - \left(\frac{1}{4}\right)^2 = \left(\frac{2}{3}x - \frac{1}{4}\right)\left(\frac{2}{3}x + \frac{1}{4}\right)$$

$$28) \quad \frac{4}{25}x^2 - \frac{36}{169}y^2 = \frac{2^2}{5^2} \cdot x^2 - \frac{6^2}{13^2} \cdot y^2 = \left(\frac{2}{5}\right)^2 \cdot x^2 - \left(\frac{6}{13}\right)^2 \cdot y^2 = \\ = \left(\frac{2}{5}x\right)^2 - \left(\frac{6}{13}y\right)^2 = \left(\frac{2}{5}x - \frac{6}{13}y\right)\left(\frac{2}{5}x + \frac{6}{13}y\right)$$

ili kraće:

$$\frac{4}{25}x^2 - \frac{36}{169}y^2 = \frac{2^2}{5^2} \cdot x^2 - \frac{6^2}{13^2} \cdot y^2 = \left(\frac{2}{5}x\right)^2 - \left(\frac{6}{13}y\right)^2 = \left(\frac{2}{5}x - \frac{6}{13}y\right)\left(\frac{2}{5}x + \frac{6}{13}y\right)$$

38.

$$\begin{aligned}
 29) \quad \frac{4}{9}x^2 - \frac{25}{49}y^2 &= \frac{2^2}{3^2} \cdot x^2 - \frac{5^2}{7^2} \cdot y^2 = \left(\frac{2}{3}\right)^2 \cdot x^2 - \left(\frac{5}{7}\right)^2 \cdot y^2 = \\
 &= \left(\frac{2}{3}x\right)^2 - \left(\frac{5}{7}y\right)^2 = \left(\frac{2}{3}x - \frac{5}{7}y\right)\left(\frac{2}{3}x + \frac{5}{7}y\right)
 \end{aligned}$$

$$\begin{aligned}
 30) \quad \frac{16}{49}x^2y^2 - \frac{25}{81}z^2 &= \frac{4^2}{7^2} \cdot x^2 \cdot y^2 - \frac{5^2}{9^2} \cdot z^2 = \\
 &= \left(\frac{4}{7}xy\right)^2 - \left(\frac{5}{9}z\right)^2 = \left(\frac{4}{7}xy - \frac{5}{9}z\right)\left(\frac{4}{7}xy + \frac{5}{9}z\right)
 \end{aligned}$$

$$31) \quad \frac{x^2}{9} - \frac{16}{y^2} = \frac{x^2}{9^2} - \frac{4^2}{y^2} = \left(\frac{x}{9}\right)^2 - \left(\frac{4}{y}\right)^2 = \left(\frac{x}{9} - \frac{4}{y}\right)\left(\frac{x}{9} + \frac{4}{y}\right)$$

$$32) \quad \frac{25}{x^2} - \frac{49}{y^2} = \frac{5^2}{x^2} - \frac{7^2}{y^2} = \left(\frac{5}{x}\right)^2 - \left(\frac{7}{y}\right)^2 = \left(\frac{5}{x} - \frac{7}{y}\right)\left(\frac{5}{x} + \frac{7}{y}\right)$$

$$\begin{aligned}
 33) \quad \frac{36a^2}{b^2} - \frac{49c^2}{81d^2} &= \frac{6^2 \cdot a^2}{b^2} - \frac{7^2 \cdot c^2}{9^2 \cdot d^2} = \frac{(6a)^2}{b^2} - \frac{(7c)^2}{(9d)^2} = \\
 &= \left(\frac{6a}{b}\right)^2 - \left(\frac{7c}{9d}\right)^2 = \left(\frac{6a}{b} - \frac{7c}{9d}\right)\left(\frac{6a}{b} + \frac{7c}{9d}\right)
 \end{aligned}$$

$$33) \quad \frac{36a^2}{b^2} - \frac{49c^2}{81d^2} = \frac{6^2 \cdot a^2}{b^2} - \frac{7^2 \cdot c^2}{9^2 \cdot d^2} = \left(\frac{6a}{b}\right)^2 - \left(\frac{7c}{9d}\right)^2 = \left(\frac{6a}{b} - \frac{7c}{9d}\right)\left(\frac{6a}{b} + \frac{7c}{9d}\right)$$

$$34) \quad 1.44x^2 - \frac{36}{169}y^2 = 1.2^2 \cdot x^2 - \frac{6^2}{13^2} \cdot y^2 = (1.2x)^2 - \left(\frac{6}{13}y\right)^2 = \left(1.2x - \frac{6}{13}y\right)\left(1.2x + \frac{6}{13}y\right)$$

ili ovako:

$$\begin{aligned}
 1.44x^2 - \frac{36}{169}y^2 &= 1.2^2 \cdot x^2 - \frac{6^2}{13^2} \cdot y^2 = (1.2x)^2 - \left(\frac{6}{13}y\right)^2 = \left(\frac{12}{10}x\right)^2 - \left(\frac{6}{13}y\right)^2 = \\
 &= \left(\frac{6}{5}x\right)^2 - \left(\frac{6}{13}y\right)^2 = \left(\frac{6}{5}x - \frac{6}{13}y\right)\left(\frac{6}{5}x + \frac{6}{13}y\right)
 \end{aligned}$$

38.

$$35) \quad 2.25a^2b^2 - \frac{16}{25}c^2 = 1.5^2 \cdot a^2 \cdot b^2 - \frac{4^2}{5^2} \cdot c^2 = (1.5ab)^2 - \left(\frac{4}{5}c\right)^2 = \left(1.5ab - \frac{4}{5}c\right)\left(1.5ab + \frac{4}{5}c\right)$$

ili ovako:

$$\begin{aligned} 2.25a^2b^2 - \frac{16}{25}c^2 &= \frac{225}{100} \cdot a^2 \cdot b^2 - \frac{4^2}{5^2} \cdot c^2 = \frac{15^2}{10^2} \cdot a^2 \cdot b^2 - \left(\frac{4}{5}\right)^2 \cdot c^2 = \left(\frac{15}{10}\right)^2 \cdot a^2 \cdot b^2 - \left(\frac{4}{5}c\right)^2 = \\ &= \left(\frac{3}{2}\right)^2 \cdot a^2 \cdot b^2 - \left(\frac{4}{5}c\right)^2 = \left(\frac{3}{2}ab\right)^2 - \left(\frac{4}{5}c\right)^2 = \left(\frac{3}{2}ab - \frac{4}{5}c\right)\left(\frac{3}{2}ab + \frac{4}{5}c\right) \end{aligned}$$

$$36) \quad \frac{25}{49}a^2 - 1.69b^2c^2 = \frac{5^2}{7^2} \cdot a^2 - 1.3^2 \cdot b^2 \cdot c^2 = \left(\frac{5}{7}a\right)^2 - (1.3bc)^2 = \left(\frac{5}{7}a - 1.3bc\right)\left(\frac{5}{7}a + 1.3bc\right)$$

ili ovako:

$$\begin{aligned} \frac{25}{49}a^2 - 1.69b^2c^2 &= \frac{5^2}{7^2} \cdot a^2 - 1.3^2 \cdot b^2 \cdot c^2 = \left(\frac{5}{7}a\right)^2 - (1.3bc)^2 = \left(\frac{5}{7}a\right)^2 - \left(\frac{13}{10}bc\right)^2 = \\ &= \left(\frac{5}{7}a - \frac{13}{10}bc\right)\left(\frac{5}{7}a + \frac{13}{10}bc\right) \end{aligned}$$

$$37) \quad 12^2 - 10^2 = (12 - 10)(12 + 10) = 2 \cdot 22 = 22$$

$$38) \quad 29^2 - 27^2 = (29 - 27)(29 + 27) = 2 \cdot 56 = 112$$

$$39) \quad 52^2 - 48^2 = (52 - 48)(52 + 48) = 4 \cdot 100 = 400$$

$$\begin{aligned} 40) \quad (x-2)^2 - (x+2)^2 &= [(x-2) - (x+2)] \cdot [(x-2) + (x+2)] = \\ &= (x-2-x-2) \cdot (x-2+x+2) = \\ &= (x-x-2-2)(x+x-2+2) = \\ &= -4 \cdot 2x = \\ &= -8x \end{aligned}$$

$$\begin{aligned} 41) \quad (x-5)^2 - (x+5)^2 &= [(x-5) - (x+5)] \cdot [(x-5) + (x+5)] = \\ &= (x-5-x-5) \cdot (x-5+x+5) = \\ &= (x-x-5-5) \cdot (x+x-5+5) = \\ &= -10 \cdot 2x = \\ &= -20x \end{aligned}$$

38.

$$\begin{aligned}
42) \quad (3x-8)^2 - (3x+5)^2 &= [(3x-8)-(3x+5)] \cdot [(3x-8)+(3x+5)] = \\
&= (3x-8-3x-5) \cdot (3x-8+3x+5) = \\
&= (3x-3x-8-5) \cdot (3x+3x+5-8) = \\
&= -13 \cdot (6x-3) = \\
&= -13 \cdot 6x - 13 \cdot (-3) = \\
&= -78x + 39
\end{aligned}$$

$$\begin{aligned}
43) \quad (7a-2)^2 - (4a+3)^2 &= [(7a-2)-(4a+3)] \cdot [(7a-2)+(4a+3)] = \\
&= (7a-2-4a-3) \cdot (7a-2+4a+3) = \\
&= (7a-4a-2-3) \cdot (7a+4a+3-2) = \\
&= (3a-5) \cdot (11a+1)
\end{aligned}$$

$$\begin{aligned}
44) \quad (2x+3y)^2 - (4x+5y)^2 &= [(2x+3y)-(4x+5y)] \cdot [(2x+3y)+(4x+5y)] = \\
&= (2x+3y-4x-5y) \cdot (2x+3y+4x+5y) = \\
&= (2x-4x+3y-5y) \cdot (2x+4x+3y+5y) = \\
&= (-2x-2y) \cdot (6x+8y)
\end{aligned}$$

možemo ovako ostaviti ili nastaviti dalje:

$$\begin{aligned}
&= -2 \cdot (x+y) \cdot 2 \cdot (3x+4y) = \\
&= -2 \cdot 2 \cdot (x+y) \cdot (3x+4y) = \\
&= -4 \cdot (x+y) \cdot (3x+4y)
\end{aligned}$$

$$\begin{aligned}
45) \quad (3a+5b)^2 - (7a-2b)^2 &= [(3a+5b)-(7a-2b)] \cdot [(3a+5b)+(7a-2b)] = \\
&= (3a+5b-7a+2b) \cdot (3a+5b+7a-2b) = \\
&= (3a-7a+5b+2b) \cdot (3a+7a+5b-2b) = \\
&= (-4a+7b) \cdot (10a+3b)
\end{aligned}$$