

**** MLADEN SRAGA ****
2010.

UNIVERZALNA ZBIRKA
POTPUNO RIJEŠENIH ZADATAKA
PRIRUČNIK ZA SAMOSTALNO UČENJE

MATEMATIKA

1

POTENCIJE

M.I.M.-SRAGA
 $\sqrt{\alpha}$

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BESPLATNA - WEB-VARIJANTA

Tisak:
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Ovo je skraćena varijanta naše zbirke ...

M.I.M.-SRAGA d.o.o. zadržava sva prava na reproduciranje , umnažanje , prodaju ove zbirke potpuno riješenih zadataka isključivo u okviru svog programa poduke i dopisne poduke.

Nikakva komercijalna upotreba ove zbirke nije dozvoljena bez pismene dozvole nakladnika !

Samo zadaci su zadani od 3. do 12. strane ...

Kompletna rješenja su od 15.-40.strane ...

21. Koristeći pravila: $a \cdot a = a^2$, $a \cdot a \cdot a = a^3$, $\underbrace{a \cdot a \cdot a \cdot \dots \cdot a}_{n\text{-puta}} = a^n$

Izračunaj:

1) $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$

2) $x \cdot x \cdot x$

3) $x \cdot y \cdot x \cdot y \cdot x \cdot z \cdot x \cdot y \cdot x \cdot x \cdot z$

4) $(xy) \cdot (xy) \cdot (xy)$

5) $(x+y) \cdot (x+y) \cdot (x+y) \cdot (x+y)$

6) $\left(\frac{x}{y}\right) \cdot \left(\frac{x}{y}\right) \cdot \left(\frac{x}{y}\right) \cdot \left(\frac{x}{y}\right)$

7) $(x-y) \cdot (x+y) \cdot (x-y) \cdot (x-y) \cdot (x+y)$

8) $\left(\frac{a-b}{c}\right) \cdot \left(\frac{a-b}{c}\right) \cdot \left(\frac{a-b}{c}\right)$

22. Koristeći pravila: $a^2 = a \cdot a$, $a^3 = a \cdot a \cdot a$, $a^n = \underbrace{a \cdot a \cdot a \cdot \dots \cdot a}_{n\text{-puta}}$

Izračunaj:

1) 5^2

2) 2^3

3) 3^4

4) $(-1)^2$

5) $(-1)^3$

6) $(-1)^4$

7) $(-2)^3$

8) $(-x)^4$

9) $\left(\frac{1}{3}\right)^2$

10) $\left(\frac{3}{5}\right)^3$

11) $\left(\frac{2}{3}\right)^5$

12) $\left(-\frac{2}{3}\right)^2$

13) $\left(-\frac{2}{3}\right)^3$

14) $\left(\frac{3}{4}\right)^4$

15) $\left(-\frac{4}{5}\right)^2$

16) $\left(-\frac{4}{5}\right)^3$

17) $\left(-\frac{4}{5}\right)^4$

18) $0,2^2$

19) $(-0,2)^2$

20) $0,2^3$

21) $(-0,2)^3$

22) $(-2,5)^2$

23) $(-2,5)^3$

24) $(-2,5)^4$

25) $(-1)^2 + (-1)^3 + (-1)^4 + (-1)^5$

26) $(-1)^{20} + (-1)^{30} + (-1)^{45}$

27) $(-2)^1 + (-2)^2 + (-2)^3 + (-2)^4$

28) $2^5 - 3^2$

29) $3^4 - 2^5$

30) $(-2)^3 + (-2)^5$

31) $\left(\frac{1}{4}\right)^2 + \left(-\frac{1}{2}\right)^3$

32) $\left[(-0,2)^2 + (-0,2)^3\right]^2$

23. Koristeći pravila:

$c \cdot a^n + d \cdot a^n = (c+d) \cdot a^n$	$c \cdot a^n - d \cdot a^n = (c-d) \cdot a^n$
---	---

1) $2x + 3x$

2) $x + 2x + 4x$

3) $7a - 2a$

4) $9y - 2y + 3y - y$

5) $2x + 3a - x + 5a + 7x - 2a$

6) $2xy + 3xy + xy$

7) $2ab - 4ab + ab$

8) $4xy^2 + 2xy^2 - 9xy^2$

9) $y + 3x^2y - 4z - 5x^2y - 2y + 8z - 3y + 8x^2y$

10) $7xy^3 - 2xy^3 + 4xy^3$

11) $2(x^2 + y) - 3(x^2 + y)$

12) $3(x+y) + 4(x+y) - (x+y)$

13) $5x^2y^3 + 2z - 2x^2y^3 + 7z + 3x^2y^3 - 3z$

14) $3(x^2 - 3x + 5) - 4(x^2 - 5x + 1)$

15) $3(x+y-1) - 6(x+y-1) + (x+y-1)$

24. Koristeći pravila: $a^n \cdot a^m = a^{n+m}$ $a^n : a^m = a^{n-m}$ $\frac{a^n}{a^m} = a^n : a^m = a^{n-m}$

Izračunaj:

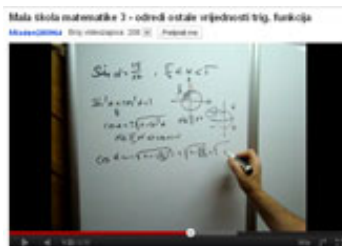
- 1) $2^5 \cdot 2^3$ 2) $5^2 \cdot 5^7$ 3) $3^x \cdot 3^{2x}$ 4) $7^{2m-5} \cdot 7^{m-2}$
 5) $2^2 \cdot 2^6 \cdot 2^4 \cdot 2^8$ 6) $3 \cdot a^4 \cdot 2 \cdot a^7$ 7) $x^2 \cdot x^3$ 8) $x \cdot x^3 \cdot x^5$
 9) $x^2 \cdot x^4 \cdot x^6$ 10) $x^{\frac{2}{3}} \cdot x^2 \cdot x^{\frac{5}{2}}$ 11) $x^2 \cdot x^{2+a} \cdot x^{a-2} \cdot x^3$ 12) $a^3 \cdot a^6$
 13) $a^4 \cdot a^2 \cdot a$ 14) $a^2 \cdot a^5 \cdot a^7 \cdot a^3$ 15) $a^{3x} \cdot a^{x+2} \cdot a^{2x}$ 16) $a^{x+y} \cdot a^{2x} \cdot a^{x+3y}$
 17) $-2 \cdot x \cdot 6 \cdot x^3 \cdot 3 \cdot x^4$ 18) $2 \cdot x^2 \cdot x^5 + 3 \cdot x^2 \cdot y^3 \cdot x \cdot y - 4 \cdot x \cdot x^6 + 2 \cdot x^3 \cdot y^2 \cdot y^2$
 19) $\left(\frac{1}{2}\right)^2 \cdot \left(\frac{1}{2}\right)^3 \cdot \left(\frac{1}{2}\right)^4$ 20) $x^{2m+1} \cdot x^{3m+2}$ 21) $x^{2m-4} \cdot x^{3m+2}$
 22) $x^{\frac{3}{2}m+1} \cdot x^{2m-7}$ 23) $x^{m+n} \cdot x^{2m-n} \cdot x^{3m+2n}$ 24) $x^{2m-n} \cdot x^{3m-n} \cdot x^{2m-2n}$
 25) $a^{2m+3n} \cdot a^{3m-5n}$ 26) $2a^{m-3n+1} \cdot 3a^{4m+n-7}$ 27) $2a^{x+y} \cdot 5a^{2x+y}$
 28) $\frac{2}{3}a^{3m+2n} \cdot \frac{9}{4}a^{2m-4n}$ 29) $(x-y)^2 \cdot (x-y)$ 30) $(x+y)^3 \cdot (x+y)^4$
 31) $(x+y-1)^{m+1} \cdot (x+y-1)^{2m+2} \cdot (x+y-1)^{3m-4}$
 32) $(x^{2m} - y^n) \cdot (x^m + y^{2n})$
 33) $(x+y)^2 \cdot (x-y)^3 \cdot (x+y)^{2m-1} \cdot (x-y)^{m-3}$
 34) $\left(\frac{ab^2}{c}\right)^{3x-2y} \cdot \left(\frac{ab^2}{c}\right)^{4x-y} \cdot \left(\frac{ab^2}{c}\right)^{x-y} \cdot \left(\frac{ab^2}{c}\right)^{3y-2x}$

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UZ OVE ZADATKE

POTENCIJE
ALGEBARSKI IZRAZI
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25.

Pomnoži:

1) $2x^2y \cdot 3x^2y^3$

2) $5x^3y^2 \cdot 2x^5y^3$

3) $\frac{2}{3}a^2b^3 \cdot \frac{9}{4}ab^4$

4) $-\frac{5}{27}a^6b^2 \cdot \left(-\frac{9}{5}a^2b\right)$

5) $\frac{1}{2}a^2b^3c^4 \cdot (-4a^3b^2c^5)$

6) $9x^4y^2 \cdot \frac{1}{3}x^2y$

7) $25x^6y^4 \cdot \frac{yx^5}{5}$

8) $2x^2y^3z^4 \cdot (-3x^3y^4z^2)$

9) $x^2 \cdot (x^4 - x^3 - 3x^2 + 2x - 7)$

10) $(-2xy^2) \cdot \left(x^2y - \frac{1}{2}xy^3 + x^3y\right)$

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26. Izračunaj:

1) $2^9 : 2^5$

2) $13^7 : 13^5$

3) $3^{5x} : 3^{3x}$

4) $5^{3m-2} : 5^{m-2}$

5) $x^4 : x^2$

6) $x^6 : x^2$

7) $x^7 : x^2 : x^3$

8) $x^7 \cdot x^3 : x^4$

9) $x : x^2$

10) $x^2 : x^{\frac{1}{2}}$

11) $x^{\frac{7}{9}} : x^{\frac{1}{3}}$

12) $x^{\frac{2}{5}} : x^2 : x^{\frac{1}{2}}$

13) $a^{4x} : a^{2x}$

14) $a^8 : a^3 : a^2$

15) $a : a^2 : a^3$

16) $a^7 : a^2 \cdot a^3$

17) $\frac{x^5}{x^2}$

18) $\frac{x^8}{x^3}$

19) $\frac{x^{\frac{3}{2}}}{x}$

20) $\frac{x^{\frac{7}{4}}}{x^{\frac{1}{3}}}$

21) $\frac{x^{m+1}}{x^{2m+2}}$

22) $\frac{x^{3m+7}}{x^{3m+5}}$

23) $\frac{x^{8m+7}}{x^{3m+2}} : x^{m-1}$

24) $\frac{a^{9m+11}}{a^{2m-3}} : a^{7m+10}$

25) $(x-y)^7 : (x-y)^4$

26) $(2x-3y)^{2x+3y} : (2x-3y)^{2x+3y}$

27) $\left(\frac{a^2b}{c^3}\right)^6 : \left(\frac{a^2b}{c^3}\right)^4$

28) $(2x+y)^{2m-4} \cdot (2x+y)^{4m-2} : (2x+y)^{m-4}$

29) $\left(\frac{a^2b}{c^3}\right)^{x-2} \cdot \left(\frac{a^2b}{c^3}\right)^{3x-3} : \left(\frac{a^2b}{c^3}\right)^{4x-4}$

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

31) $(x^2+1) \cdot (x-x^2+1)$

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27. Koristeći pravila: $(ab)^n = a^n b^n$ $(abc)^n = a^n b^n c^n$ $(a^n)^m = a^{n \cdot m}$ $\left((a^n)^m\right)^z = a^{n \cdot m \cdot z}$

Izračunaj:

- | | | | |
|--|--|--|---|
| 1) $(2x)^2$ | 2) $(3x)^2$ | 3) $\left(\frac{3}{4}x^2y^3\right)^2$ | 4) $\left(\frac{2}{3}xy^2\right)^3$ |
| 5) $\left(\frac{1}{2}x^2y^3\right)^4$ | 6) $(x^2)^2$ | 7) $(-x^2)^2$ | 8) $(x^2)^3$ |
| 9) $(x^2)^5$ | 10) $(2x^3y^4)^2$ | 11) $(2x^3y^4)^3$ | 12) $(2x^3y^4)^4$ |
| 13) $\left[(-y)^2\right]^3$ | 14) $(-y^2)^3$ | 15) $(-y^3)^2$ | 16) $-(-y^4)^3$ |
| 17) $-(-x^5)^2$ | 18) $\left[-(-x^5)\right]^2$ | 19) $\left[-(-x^5)^2\right]^2$ | 20) $-(x^5)^2$ |
| 21) $(2ab^2)^3$ | 22) $(a^2b^3)^4$ | 23) $(-2y^3)^2$ | 24) $(-3y^2)^3$ |
| 25) $\left(-\frac{2}{3}x^2\right)^2$ | 26) $\left(-\frac{2}{3}x^2\right)^3$ | 27) $(x^m)^2$ | 28) $(y^n)^3$ |
| 29) $(x^m y^n)^4$ | 30) $(x^m y^n)^m$ | 31) $(a^{3x} b^{2y})^2$ | 32) $(a^{3x} b^{2y})^x$ |
| 33) $(2^x)^2$ | 34) $(3^x)^3$ | 35) $(2^x)^x$ | 36) $(2^m 3^n)^2$ |
| 37) $\left((x^2)^3\right)^4$ | 38) $\left((y^3)^4\right)^5$ | 39) $\left((x^2)^x\right)^4$ | 40) $\left((y^3)^x\right)^y$ |
| 41) $\left((x^2)^6\right)^2 \cdot (x^3)^5$ | 42) $(y^3)^4 \cdot \left((y^5)^3\right)^2$ | 43) $\left((x^2)^5\right)^3 : (x^4)^7$ | 44) $\left((a^3)^6\right)^8 : \left((a^2)^4\right)^5$ |
| 45) $\left(\frac{2}{3}a^2b^3\right)^3 : (2ab^2)^2$ | 46) $\left(\frac{1}{2}x^2y^3\right)^3 \cdot (4x^3y^2)^3$ | 46) $\left(\frac{1}{2}x^2y^3\right)^3 : (4x^3y^2)^3$ | |
| 48) $(3a^2b)^x \cdot (a^x b^{3x})^2$ | 49) $(x^3)^{m+1}$ | 50) $(x^3)^{2m-1} \cdot (x^2)^{m-1}$ | |
| 51) $(x^5)^{2m-1} : (x^3)^{m+1}$ | 52) $2(x^2)^3 + 3(x^3)^2$ | 53) $(a^3)^4 - 3(a^2)^6 + 4(a^4)^3$ | |

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28. Koristeći pravilo: $a^n \cdot b^n = (a \cdot b)^n$ ili $a^n b^n c^n = (abc)^n$

Izračunaj:

1) $2^x \cdot 5^x$

2) $3^x \cdot 4^x$

3) $4^a \cdot 6^a$

4) $2^y \cdot 4^y$

5) $3^5 \cdot 2^5$

6) $\left(\frac{1}{3}\right)^3 \cdot 9^3$

7) $\left(\frac{3}{2}\right)^4 \cdot \left(\frac{2}{3}\right)^4$

8) $\left(\frac{1}{2}\right)^5 \cdot 4^5$

9) $\left(\frac{2}{3}\right)^5 \cdot \left(\frac{9}{2}\right)^5$

10) $\left(\frac{ac}{b}\right)^2 \cdot \left(\frac{b}{c}\right)^2$

11) $\left(\frac{a}{b}\right)^4 \cdot \left(\frac{b}{a}\right)^4$

12) $\left(\frac{3}{4}\right)^3 \cdot \left(\frac{8}{3}\right)^3$

13) $\left(\frac{xy}{2}\right)^2 \cdot \left(\frac{4}{x^2 y}\right)^2$

14) $\left(\frac{xy}{z}\right)^3 \cdot \left(\frac{x}{yz}\right)^3$

15) $\left(\frac{xy}{z}\right)^{m+1} \cdot \left(\frac{x}{yz}\right)^{m+1}$

16) $\left(\frac{x^2 y^3}{z^4}\right)^2 \cdot \left(\frac{z^6}{x^3 y^2}\right)^2$

17) $\left(\frac{x^2 y^3}{z^4}\right)^m \cdot \left(\frac{z^6}{x^3 y^2}\right)^m$

18) $\left(\frac{x-y}{x+1}\right)^5 \cdot \left(\frac{x^2-1}{x^2+2xy+y^2}\right)^5 \cdot \left(\frac{x+y}{x-y}\right)^5$

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29. Koristeći pravila: $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$ $\left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n = \frac{b^n}{a^n}$

Izračunaj:

1) $\left(\frac{2}{3}\right)^2$

2) $\left(\frac{2}{3}\right)^{-2}$

3) $\left(\frac{1}{2}\right)^3$

4) $\left(\frac{2}{3}\right)^4$

5) $\left(\frac{5}{7}\right)^{-1}$

6) $\left(1\frac{2}{7}\right)^{-1}$

7) $\left(\frac{4}{5}\right)^{-2}$

8) $\left(\frac{2}{3}\right)^{-3}$

9) $\left(2\frac{1}{3}\right)^{-2}$

10) $\left(1\frac{2}{7}\right)^{-2}$

11) $\left(1\frac{1}{2}\right)^{-3}$

12) $\left(\frac{3}{4}\right)^{-2}$

13) $\left(\frac{x}{y}\right)^2$

14) $\left(-\frac{x}{y}\right)^2$

15) $\left(-\frac{x}{y}\right)^3$

16) $\left(-\frac{x}{y}\right)^4$

17) $\left(1\frac{1}{2}\right)^2$

18) $\left(-2\frac{2}{3}\right)^2$

19) $\left(-2\frac{2}{3}\right)^3$

20) $\left(3\frac{4}{5}\right)^2$

21) $\left(\frac{x^2}{y^3}\right)^4$

22) $\left(-\frac{x^3}{y^4}\right)^3$

23) $\left(-\frac{x^3}{y^4}\right)^2$

24) $\left(\frac{x^2y^3}{z^4}\right)^2$

25) $\left(\frac{x^2y^5}{z^6}\right)^{-2}$

26) $\left(\frac{2x^4}{3y^2z}\right)^3$

27) $\left(\frac{x^{-2}y^3}{2^{-3}z^{-4}}\right)^3$

28) $\left(\frac{2x^4y^{-2}}{5z^3}\right)^2$

29) $\left(\frac{2x^4y^{-2}}{5z^3}\right)^{-2}$

30) $\left(\frac{2x^4y^{-2}}{5z^3}\right)^3$

31) $\left(\frac{x}{y}\right)^{-1}$

32) $\left(\frac{x}{y}\right)^{-2} \cdot \left(\frac{y}{x}\right)^3$

33) $\left(\frac{2x-3}{2x+3}\right)^{-3}$

34) $\left(\frac{1}{x-y}\right)^{-2}$

35) $\left(\frac{a^2b^5}{c^3}\right)^{-3}$

36) $\left(\frac{a^2}{y^3}\right)^3 \cdot \left(\frac{y}{a^3}\right)^2 \cdot \left(\frac{y^2}{a^4}\right)^2$

37) $\left(\frac{3}{2}\right)^{-2} \cdot 2^{-3} + 2^{-2}$

38) $\frac{1}{8} \cdot \left(\frac{3}{4}\right)^{-2}$

39) $\left(\frac{2}{3}\right)^{-1} + \left(\frac{1}{3}\right)^{-2} - \left(\frac{1}{2}\right)^{-3}$

40) $\left[\left(\frac{3}{4}\right)^{-2} \cdot \frac{2^{-2}}{3^{-3}}\right]^{-2} \cdot \left(\frac{3}{2}\right)^{-3}$

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30. Koristeći pravila: $a^0 = 1$, $a^1 = a$, $a^{-1} = \frac{1}{a}$, $a^{-n} = \frac{1}{a^n}$

Izračunaj:

- | | | | |
|--|---|---|-------------------------------------|
| 1) 2^0 | 2) x^0 | 3) $\left(\frac{x^2 y^4}{z}\right)^0$ | 4) $x^0 + y^0$ |
| 5) 3^0 | 6) $(-3)^0$ | 7) -3^0 | 8) $-3x^0$ |
| 9) $(x+y)^0$ | 10) $(2x-7y)^0$ | 11) $x^0 - 2y^0 + 7z^0$ | 12) $x^0 - (2y)^0 + (7z)^0$ |
| 13) $x^0 \cdot x^0$ | 14) $(x^0)^2$ | 15) $(x^m)^0$ | 16) $(4x)^0$ |
| 17) 5^{-1} | 18) x^{-1} | 19) $0,2^{-1}$ | 20) $(x-y)^{-1}$ |
| 21) 3^{-2} | 22) x^{-3} | 23) $0,3^{-2}$ | 24) $(2x-5)^{-5}$ |
| 25) 4^{-1} | 26) $\frac{1}{4^{-1}}$ | 27) $\frac{1}{(-4)^{-1}}$ | 28) $\left(\frac{2}{3}\right)^{-1}$ |
| 29) $\frac{2}{5^{-1}}$ | 30) $\frac{2}{(-5)^{-1}}$ | 31) $\frac{3}{2^{-2}}$ | 32) $\frac{2a}{b^{-4}}$ |
| 33) $3^{5x-4} \cdot 3^{4x-3} \cdot 3^{7-9x}$ | 34) $2^{2x+1} \cdot 2^3 \cdot 2^{2-3x} \cdot 2^{x-6}$ | 35) $5^{2x-3} \cdot 5^{2-2x}$ | |
| 36) $(x+y)^{2m-n} \cdot (x+y)^{n-2m}$ | 37) $27^0 \cdot x^0 \cdot y^0 \cdot 2^1 \cdot \left(\frac{1}{3}\right)^{-1}$ | | |
| 38) $y^0 \cdot 2^{-1} \cdot \left(\frac{1}{2}\right)^1 \cdot \left(\frac{1}{5}\right)^{-1} \cdot 2^{-3}$ | 39) $\left(\frac{a^2 b}{c^3}\right)^{m+n} : \left(\frac{a^2 b}{c^3}\right)^{m+2n} \cdot \left(\frac{a^2 b}{c^3}\right)^n$ | | |
| 40) $\left(\frac{2^{-3} - 2^{-1}}{2^{-2} + 2^{-4}}\right)^{-2}$ | 41) $\left(\frac{2^{-2} \cdot 3^{-1}}{2^{-1} \cdot 3^{-2}}\right)^{-2}$ | 42) $\left(\frac{2^{-2} - 3^{-1}}{2^{-1} + 3^{-2}}\right)^{-2}$ | |
| 43) $3^0 \cdot 2^0 - 3^1$ | 44) $3^0 + 2^0 - 3^1$ | 45) $2^0 + 2^1 - 2^{-2}$ | |
| 46) $2^{-2} - 2^{-3}$ | 47) $2^{-3} - 2^{-2} + 2^{-1}$ | 48) $3^{-2} - 2^{-3}$ | |
| 49) $\frac{2^{-2}}{3^{-3}}$ | 50) $\frac{2^3 \cdot 3^{-2}}{4^2}$ | 51) $\frac{2^2 \cdot 4^{-1}}{3^2 \cdot 6^{-1}}$ | |
| 52) $\frac{a^{-1}}{b^{-1}}$ | 53) $\frac{a^{-2}}{b^{-2}}$ | 54) $\frac{a^{-1} b}{c^{-1}}$ | |
| 55) $\frac{a^2 b^{-3}}{c^{-1} d^2}$ | 56) $\frac{x^{-1} b c^2}{y^{-2} c^3 d^{-1}}$ | 57) $\frac{x^{-1} b^{-2} c^2}{y^2 c^{-3} d^{-1}}$ | |

31.

a) Zapiši u obliku potencija s bazom 2:

1) $4 \cdot 32 \cdot 16$

2) $(4 \cdot 8 \cdot 16)^2$

3) $(2^3 \cdot 4^2 \cdot 8)^3$

b) Zapiši u obliku potencija s bazom 3:

1) $(3 \cdot 9 \cdot 27)^4$

2) $(9 \cdot 81 \cdot 3)^2$

3) $(3^5 \cdot 9^3 \cdot 27^2)^3$

c) Pojednostavni i rezultati zapiši kao potenciju:

1) $2^3 + 2^3$

2) $3 \cdot 2^5 + 2^5$

3) $6 \cdot 2^4 - 2 \cdot 4^4$

4) $5 \cdot 3^2 - 3 \cdot 3^2$

5) $3 \cdot 5^3 + 2 \cdot 5^3$

32.

1) $\left(\frac{9}{2}x^6y^5\right) : \left(\frac{3}{2}x^4y^3\right)$

2) $\left(\frac{4}{3}x^7y^3\right) : \left(\frac{2}{15}x^5y^2\right)$

3) $\left(-\frac{5}{7}x^8y^3\right) : \left(-\frac{1}{7}x^3y^3\right)$

4) $\left(\frac{25}{49}a^9b^6c^5\right) : \left(\frac{5}{7}a^6b^3c^4\right)$

33.

1) $\frac{16 \cdot 2^{x+1}}{8^{x-1}}$

2) $\frac{4^{x-1}16^{x+2}}{32^{1-x}}$

3) $\frac{9^x \cdot 27^{x-1}}{81^{x+1}}$

4) $\frac{25^{x+1} \cdot 5^{x+5}}{125^{3-x}}$

34.

1) $\left(\frac{x^{-2}}{y^{-3}}\right)^{-2} \cdot \left(\frac{x^4}{y^2}\right)^2$

2) $\left(\frac{x^{-2}}{y^{-3}}\right)^2 \cdot \left(\frac{x^4}{y^2}\right)^2$

3) $\left(\frac{3x^3}{2y^4}\right)^3 \cdot \left(\frac{4x^2}{3y^3}\right)^2$

4) $\left(\frac{3x^3}{2y^4}\right)^3 \cdot \left(\frac{3x^2}{4y^3}\right)^{-2}$

5) $\left(-\frac{5a^7b^2}{6c^3}\right)^{-2} \cdot \left(\frac{5a^2}{3b^3c^2}\right)^2$

6) $\left(-\frac{3x^2y^3}{5z^4}\right)^4 \cdot \left(\frac{3x^6y^2}{5z^2}\right)^{-2}$

35.

1) $(x^2)^3$

2) $(2x^4)^2$

3) $(a^2b^5)^2$

4) $(4ab^2)^2$

5) $(2x^2y^3)^3$

6) $(3x^2 + y^3)^2$

7) $(a^2b^3 - 4c^4)^2$

8) $(a^2 - b^3c^2)(a^2 + b^3c^2)$

9) $(2a^3 + b^2)^3$

10) $(2x^2y^3 + 3xy^2)^2$

35. b)

1) $(x^2)^3$

2) $(y^4)^2$

3) $(a^2b^3)^2$

4) $(a^3b^5)^2$

5) $a^2b^3 \cdot a^3b^5$

6) $(x^3 + y^4)^2$

7) $(a^2b^3 - a^3b^5)^2$

8) $(a^2b^3 - a^3b^5) \cdot (a^2b^3 + a^3b^5)$

9) $(x^3y^2 + x^2y^4)^3$

36 . I sada primjenom svih pravila za potencije riješite dopunske zadatke

POTENCIJE

$$c \cdot a^n \pm d \cdot a^n = (c \pm d) \cdot a^n$$

$a^n \cdot a^m = a^{n+m}$	$(abc)^n = a^n b^n c^n$	$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$	$a^1 = a$
$a^n : a^m = a^{n-m}$	$(a^n)^m = a^{n \cdot m}$	$\left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n = \frac{b^n}{a^n}$	$a^{-1} = \frac{1}{a}$
$\frac{a^n}{a^m} = a^n : a^m = a^{n-m}$	$\left((a^n)^m\right)^z = a^{n \cdot m \cdot z}$	$a^0 = 1$	$a^{-n} = \frac{1}{a^n}$

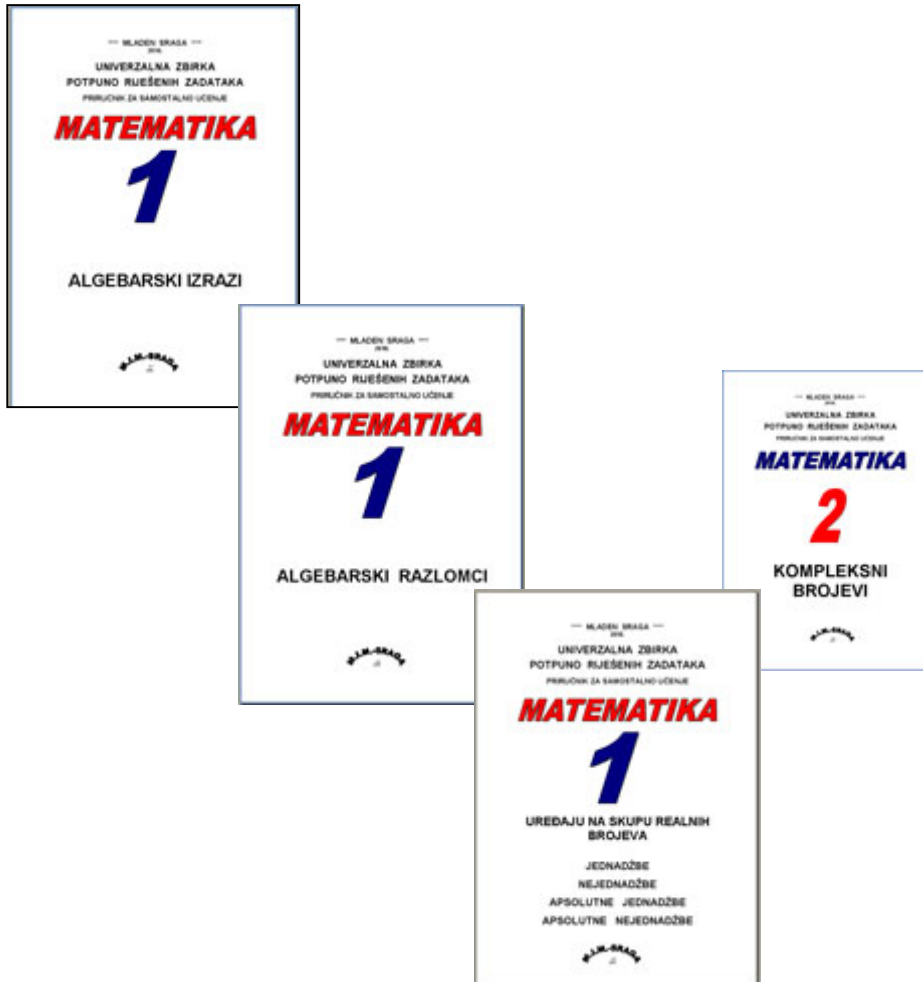
36.

Izračunaj:

- 1) $2x^2 \cdot x^3 + 5x \cdot x^4$
- 2) $\frac{1}{3}x^7 \cdot x^2 - \frac{2}{5}x^{17} : x^8$
- 3) $(a^3 \cdot a^4)^2$
- 4) $(a^2 \cdot a^4 \cdot a^5)^3$
- 5) $(a^8 : a^4)^2$
- 6) $(a^7 : a^5)^6$
- 7) $(a^2)^3 : (a^2)^2$
- 8) $(x^7)^2 : (x^3)^4$
- 9) $25x^9 y^4 : 5x^7 y^2$
- 10) $\left(\frac{1}{47}x \cdot 7x^5 : \frac{1}{7}x^6\right)^{2m+3}$
- 11) $2a^2 b^3 c^4 \cdot 3a^4 b^3 c \cdot 4ab^4 c^2$
- 12) $a^4 \cdot a^3 + 3a^2 \cdot a^5 + 4a \cdot a^6$
- 13) $2x^5 \cdot x^4 + 5x^7 \cdot x^2 - 3x^3 \cdot y^6$
- 14) $7x^5 \cdot x^3 + 2x^{10} : x^2 - 3x^3 \cdot y^5$
- 15) $3x^4 y^{2b} z^m \cdot 2x^{m-2} y^{3b} z^2$
- 16) $x^{m+3} y^{4n-1} : x^{m+2} y^{1-2n}$
- 17) $x^{m+n-3} \cdot x^{2m-3n+2} : x^{m+2n-1}$
- 18) $(a^{3x})^4 \cdot (a^2)^{6x} \cdot (a^{4x})^3$
- 19) $(a^{3x})^4 \cdot (a^2)^{6x} : (a^{4x})^3$
- 20) $(a^{3x})^4 + 3(a^2)^{6x} - 2(a^{4x})^3$
- 21) $(x^7 y^2 : x^3 y^3)^4$
- 22) $(x^7 y^2)^2 : (x^3 y^3)^3$
- 23) $(a^2 b^3)^4 \cdot (a^2 b^4)^3$
- 24) $(x+1)^0 + 3^0 - 4x^0$
- 25) $(x^0 + 2) \cdot (x+2)^0$
- 26) $(x^0 y - xy^0) \cdot (xy - x^2 y^3)^0$
- 27) $2x^0 + 3y^0 - (5xy)^0$
- 28) $\frac{3xy^0}{2x^0 y}$
- 29) $\frac{3+x^0}{y^0 - 2}$
- 30) $\frac{x^2 y^0 3^1}{(xy)^0}$
- 31) $x^{-5} \cdot x^2$
- 32) $x^{-4} : x^2$
- 33) $x^{-3} \cdot x^{-2} : x$
- 34) $x^8 : x^{-3}$
- 35) $12x^{-9} : 3x^{-2}$

Rješenja su od 15.strane na dalje...

Iz naše ponude izdvajamo
Zbirke potpuno riješenih zadataka priručnici za samostalno učenje:
Matematika-1-prvo polugodište:



Sve dodatne informacije o ovim zbirkama
zatražite na mail: mim-sraga@zg.htnet.hr

ili na naše telefone 01-4578-431 , 4579-130

Dodatne informacije i PDF ogleadne primjerke
potražite na našoj web-stranici : www.mim-sraga.com

Novo: **MALA ŠKOLA MATEMATIKE –1** na



BESPLATNA video poduka i instrukcije

UČIMO ZAJEDNO

POTENCIJE

ALGEBARSKI IZRAZI

ALGEBARSKI RAZLOMCI

link: <http://www.mim-sraga.com/Mala-skola-matematike--video.htm>



Rješenja svih zadataka s kompletnim postupkom i uputama

21. Koristimo pravila: $a \cdot a = a^2$, $a \cdot a \cdot a = a^3$, $\underbrace{a \cdot a \cdot a \cdot \dots \cdot a}_{n\text{-puta}} = a^n$

Uputa: Prebrojite koliko se puta ponavlja isti faktor i taj broj stavite u eksponent:

1) $\underbrace{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2}_{2\text{-se ponavlja pet puta pa u eksponent pišemo 5}} = 2^5 \quad \rightarrow \text{čitamo: dva na petu}$

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 ili
 direktni link na : [video uputu ...uz 21. zadatak](#)

1) $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 = 2^5$

2) $x \cdot x \cdot x = x^3$

3) $x \cdot y \cdot x \cdot y \cdot x \cdot z \cdot x \cdot y \cdot x \cdot x \cdot z = x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot y \cdot y \cdot y \cdot z \cdot z = x^6 \cdot y^3 \cdot z^2 = x^6 y^3 z^2$

grupiramo iste faktore...

4) $(xy) \cdot (xy) \cdot (xy) = (xy)^3$

5) $(x+y) \cdot (x+y) \cdot (x+y) \cdot (x+y) = (x+y)^4$

6) $\left(\frac{x}{y}\right) \cdot \left(\frac{x}{y}\right) \cdot \left(\frac{x}{y}\right) \cdot \left(\frac{x}{y}\right) = \left(\frac{x}{y}\right)^4$

7) $(x-y) \cdot (x+y) \cdot (x-y) \cdot (x-y) \cdot (x+y) =$
 $= (x-y) \cdot (x-y) \cdot (x-y) \cdot (x+y) \cdot (x+y) = (x-y)^3 \cdot (x+y)^2$

8) $\left(\frac{a-b}{c}\right) \cdot \left(\frac{a-b}{c}\right) \cdot \left(\frac{a-b}{c}\right) = \left(\frac{a-b}{c}\right)^3$

22. Koristimo pravila: $a^2 = a \cdot a$, $a^3 = a \cdot a \cdot a$, $a^n = \underbrace{a \cdot a \cdot a \cdot \dots \cdot a}_{n\text{-puta}}$

1) $5^2 = 5 \cdot 5 = 25$

2) $2^3 = 2 \cdot 2 \cdot 2 = 8$

3) $3^4 = 3 \cdot 3 \cdot 3 \cdot 3 = 81$

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

5) $(-1)^3 = (-1) \cdot (-1) \cdot (-1) = -1$

6) $(-1)^4 = (-1) \cdot (-1) \cdot (-1) \cdot (-1) = 1$

}

Zaključak: $(-1)^{\text{na parni eksponent}} = 1$
 $(-1)^{\text{na neparni eksponent}} = -1$

7) $(-2)^3 = \underbrace{(-2) \cdot (-2) \cdot (-2)}_{\downarrow} = -8$

Imamo neparan broj "minusa" pa će i umnožak biti negativno tj. imati će predznak minus

8) $(-x)^4 = \underbrace{(-x) \cdot (-x) \cdot (-x) \cdot (-x)}_{\substack{\text{Imamo paran broj "minusa" pa} \\ \text{je produkt pozitivan broj}}} = x^4$

22. Koristimo pravila: $a^2 = a \cdot a$, $a^3 = a \cdot a \cdot a$, $a^n = \underbrace{a \cdot a \cdot a \cdot \dots \cdot a}_{n\text{-puta}}$

$$9) \left(\frac{1}{3}\right)^2 = \frac{1}{3} \cdot \frac{1}{3} = \frac{1}{9}$$

$$10) \left(\frac{3}{5}\right)^3 = \frac{3}{5} \cdot \frac{3}{5} \cdot \frac{3}{5} = \frac{27}{125}$$

$$11) \left(\frac{2}{3}\right)^5 = \frac{2}{3} \cdot \frac{2}{3} \cdot \frac{2}{3} \cdot \frac{2}{3} \cdot \frac{2}{3} = \frac{32}{243}$$

$$12) \left(-\frac{2}{3}\right)^2 = \left(-\frac{2}{3}\right) \cdot \left(-\frac{2}{3}\right) = \frac{2 \cdot 2}{3 \cdot 3} = \frac{4}{9}$$

$$13) \left(-\frac{2}{3}\right)^3 = \left(-\frac{2}{3}\right) \cdot \left(-\frac{2}{3}\right) \cdot \left(-\frac{2}{3}\right) = -\frac{2 \cdot 2 \cdot 2}{3 \cdot 3 \cdot 3} = -\frac{8}{27}$$

$$14) \left(\frac{3}{4}\right)^4 = \frac{3}{4} \cdot \frac{3}{4} \cdot \frac{3}{4} \cdot \frac{3}{4} = \frac{81}{256}$$

$$15) \left(-\frac{4}{5}\right)^2 = \left(-\frac{4}{5}\right) \cdot \left(-\frac{4}{5}\right) = +\frac{4 \cdot 4}{5 \cdot 5} = \frac{16}{25}$$

$$16) \left(-\frac{4}{5}\right)^3 = \left(-\frac{4}{5}\right) \cdot \left(-\frac{4}{5}\right) \cdot \left(-\frac{4}{5}\right) = -\frac{4 \cdot 4 \cdot 4}{5 \cdot 5 \cdot 5} = -\frac{64}{125}$$

$$17) \left(-\frac{4}{5}\right)^4 = \left(-\frac{4}{5}\right) \cdot \left(-\frac{4}{5}\right) \cdot \left(-\frac{4}{5}\right) \cdot \left(-\frac{4}{5}\right) = +\frac{4 \cdot 4 \cdot 4 \cdot 4}{5 \cdot 5 \cdot 5 \cdot 5} = \frac{256}{625}$$

$$18) 0,2^2 = 0,2 \cdot 0,2 = 0,04$$

$$19) (-0,2)^2 = (-0,2) \cdot (-0,2) = +0,2 \cdot 0,2 = 0,04$$

$$20) 0,2^3 = 0,2 \cdot 0,2 \cdot 0,2 = 0,04 \cdot 0,2 = 0,008$$

$$21) (-0,2)^3 = (-0,2) \cdot (-0,2) \cdot (-0,2) = -(0,2 \cdot 0,2 \cdot 0,2) = -0,008$$

$$22) (-2,5)^2 = (-2,5) \cdot (-2,5) = +(2,5 \cdot 2,5) = 6,25$$

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22. Koristimo pravila: $a^2 = a \cdot a$, $a^3 = a \cdot a \cdot a$, $a^n = \underbrace{a \cdot a \cdot a \cdot \dots \cdot a}_{n\text{-puta}}$

$$23) \quad (-2,5)^3 = (-2,5) \cdot (-2,5) \cdot (-2,5) = -(2,5 \cdot 2,5 \cdot 2,5) = 15,625$$

$$24) \quad (-2,5)^4 = (-2,5) \cdot (-2,5) \cdot (-2,5) \cdot (-2,5) = +(2,5 \cdot 2,5 \cdot 2,5 \cdot 2,5) = 39,0625$$

$$25) \quad (-1)^2 + (-1)^3 + (-1)^4 + (-1)^5 = \underbrace{+1 + (-1)}_0 + \underbrace{(+1) + (-1)}_0 = 0 + 0 = 0$$

$$26) \quad (-1)^{20} + (-1)^{30} + (-1)^{45} = +1 \cdot (+1) \cdot (-1) = -1$$

$$27) \quad (-2)^1 + (-2)^2 + (-2)^3 + (-2)^4 = -2 + 4 - 8 + 16 = 4 + 16 - 2 - 8 = 10$$

$$28) \quad 2^5 - 3^2 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 - 3 \cdot 3 = 32 - 9 = 23$$

$$29) \quad 3^4 - 2^5 = 3 \cdot 3 \cdot 3 \cdot 3 - 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 = 81 - 32 = 49$$

$$30) \quad (-2)^3 + (-2)^5 = (-2) \cdot (-2) \cdot (-2) + (-2) \cdot (-2) \cdot (-2) \cdot (-2) \cdot (-2) = -8 - 32 = -40$$

$$31) \quad \left(\frac{1}{4}\right)^2 + \left(-\frac{1}{2}\right)^3 = \frac{1}{4} \cdot \frac{1}{4} + \left(-\frac{1}{2}\right) \cdot \left(-\frac{1}{2}\right) \cdot \left(-\frac{1}{2}\right) = \frac{1}{16} - \frac{1}{8} = \frac{1-2}{16} = -\frac{1}{16}$$

$$32) \quad \left[(-0,2)^2 + (-0,2)^3\right]^2 = \left[(-0,2) \cdot (-0,2) + (-0,2) \cdot (-0,2) \cdot (-0,2)\right]^2 = \\ = (0,04 - 0,008)^2 = 0,032^2 = 0,001024$$

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 ili
 direktni link na : [video uputu ...uz 22. zadatak](#)

23. Koristimo pravila:

$c \cdot a + d \cdot a = (c + d) \cdot a$	$c \cdot a - d \cdot a = (c - d) \cdot a$
$c \cdot a^n + d \cdot a^n = (c + d) \cdot a^n$	$c \cdot a^n - d \cdot a^n = (c - d) \cdot a^n$

$$1) \quad 2x + 3x = (2 + 3) \cdot x = 5 \cdot x = 5x$$

$$\left. \begin{array}{l} 5 \cdot x \\ \text{ili} \\ 5x \end{array} \right\} \text{ je potpuno isti izraz...}$$

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

ili taj isti zadatak na malo duži ali sigurniji način:

$$x + 2x + 4x = 1x + 2x + 4x = (1 + 2 + 4) \cdot x = 7x \quad \text{Dakle: } x = 1x$$

Praksa je pokazala da velika većina đaka radi istu grešku: uzimate da je: $x = 0x$ što nije točno!!

dakle vi kada računate u glavi grešite na ovaj način:

$$x + 2x + 4x = 6x \quad \text{ili} \quad x + 2x + 4x = (0 + 2 + 4) \cdot x = 6x \quad \text{što nije točno!!!}$$

Jednom zauvijek treba zapamtiti $x = 1x$ pa to u zadatku treba izgledati ovako:

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

$$3) \quad 7a - 2a = (7 - 2) \cdot a = 5 \cdot a = 5a$$

$$4) \quad 9y - 2y + 3y - y = (9 - 2 + 3 - 1) \cdot y = 9 \cdot y = 9y$$

ili taj isti zadatak na malo duži ali sigurniji način:

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

$$5) \quad 2x + 3a - x + 5a + 7x - 2a =$$

$$= 2x - x + 7x + 3a + 5a - 2a = (2 - 1 + 7) \cdot x + (3 + 5 - 2) \cdot a = 8 \cdot x + 6 \cdot a = 8x + 6a$$

$$6) \quad 2xy + 3xy + xy = (2 + 3 + 1) \cdot xy = 6xy$$

$$7) \quad 2ab - 4ab + ab = (2 - 4 + 1) \cdot ab = -1 \cdot ab = -ab$$

$$8) \quad 4xy^2 + 2xy^2 - 9xy^2 = (4 + 2 - 9) \cdot xy^2 = -3 \cdot xy^2 = -3xy^2$$

$$9) \quad y + 3x^2y - 4z - 5x^2y - 2y + 8z - 3y + 8x^2y =$$

$$= y - 2y - 3y + 8z - 4z + 3x^2y - 5x^2y + 8x^2y =$$

$$= (1 - 2 - 3) \cdot y + (8 - 4) \cdot z + (3 - 5 + 8) \cdot x^2y =$$

$$= -4 \cdot y + 4 \cdot z + 6 \cdot x^2y =$$

$$= -4y + 4z + 6x^2y$$

$$\left. \begin{array}{l} \\ \\ \\ \\ \end{array} \right\} \text{ Ovo je potpuno isti izraz}$$

23. Koristimo pravila:

$c \cdot a + d \cdot a = (c + d) \cdot a$	$c \cdot a - d \cdot a = (c - d) \cdot a$
$c \cdot a^n + d \cdot a^n = (c + d) \cdot a^n$	$c \cdot a^n - d \cdot a^n = (c - d) \cdot a^n$

$$10) \quad 7xy^3 - 2xy^3 + 4xy^3 = (7 - 2 + 4) \cdot xy^3 = 9 \cdot xy^3 = 9xy^3$$

$$11) \quad 2(x^2 - y) - 3(x^2 + y) = (2 - 3) \cdot (x^2 + y) = -1 \cdot (x^2 + y) = -x^2 - y$$

$$12) \quad 3(x + y) + 4(x + y) - (x + y) = (3 + 4 - 1) \cdot (x + y) = 6(x + y)$$

ili taj isti zadatak na malo duži ali sigurniji način:

$$\begin{aligned} 3(x + y) + 4(x + y) - (x + y) &= 3(x + y) + 4(x + y) - 1(x + y) = \\ &= (3 + 4 - 1) \cdot (x + y) = \\ &= 6(x + y) \end{aligned}$$

$$\begin{aligned} 13) \quad 5x^2y^3 + 2z - 2x^2y^3 + 7z + 3x^2y^3 - 3z &= \\ &= 5x^2y^3 - 2x^2y^3 + 3x^2y^3 + 2z + 7z = \\ &= (5 - 2 + 3) \cdot x^2y^3 + (2 + 7) \cdot z = \\ &= 6 \cdot x^2y^3 + 9 \cdot z = \\ &= 6x^2y^3 + 9z \end{aligned}$$

$$\begin{aligned} 14) \quad 3(x^2 - 3x + 5) - 4(x^2 - 5x + 1) &= \\ &= (3 - 4) \cdot (x^2 - 3x + 5) = \\ &= -1 \cdot (x^2 - 3x + 5) = \\ &= -x^2 + 3x - 5 \end{aligned}$$

$$15) \quad 3(x + y - 1) - 6(x + y - 1) + (x + y - 1) = (3 - 6 + 1) \cdot (x + y - 1) = -2(x + y - 1)$$

ili taj isti zadatak na malo duži ali sigurniji način:

$$\begin{aligned} 3(x + y - 1) - 6(x + y - 1) + (x + y - 1) &= 3(x + y - 1) - 6(x + y - 1) + 1(x + y - 1) = \\ &= (3 - 6 + 1) \cdot (x + y - 1) = \\ &= -2(x + y - 1) \end{aligned}$$

24. Koristimo pravila:

$$a^n \cdot a^m = a^{n+m} \quad a^n : a^m = a^{n-m} \quad \frac{a^n}{a^m} = a^n : a^m = a^{n-m}$$

1) $2^5 \cdot 2^3 = 2^{5+3} = 2^8$

2) $5^2 \cdot 5^7 = 5^{2+7} = 5^9$

3) $3^x \cdot 3^{2x} = 3^{x+2x} = 3^{3x}$

4) $7^{2m-5} \cdot 7^{m-2} = 7^{2m-5+m-2} = 7^{2m+m-5-2} = 7^{3m-7}$

5) $2^2 \cdot 2^6 \cdot 2^4 \cdot 2^8 = 2^{2+6+4+8} = 2^{20}$

6) $3 \cdot a^4 \cdot 2 \cdot a^7 = 3 \cdot 2 \cdot a^4 \cdot a^7 = 6 \cdot a^{4+7} = 6a^{11}$

7) $x^2 \cdot x^3 = x^{2+3} = x^5$

8) $x \cdot x^3 \cdot x^5 = x^1 \cdot x^3 \cdot x^5 = x^{1+3+5} = x^9$

Pazi $x = x^1$

9) $x^2 \cdot x^4 \cdot x^6 = x^{2+4+6} = x^{12}$

10) $x^{\frac{2}{3}} \cdot x^2 \cdot x^{\frac{5}{2}} = x^{\frac{2}{3}+2+\frac{5}{2}} = x^{\frac{2 \cdot 2+2 \cdot 6+5 \cdot 3}{6}} = x^{\frac{4+12+15}{6}} = x^{\frac{31}{6}}$

11) $x^2 \cdot x^{2+a} \cdot x^{a-2} \cdot x^3 = x^{2+2+a+a-2+3} = x^{a+a+2+2-2+3} = x^{2a+5}$

12) $a^3 \cdot a^6 = a^{3+6} = a^9$

13) $a^4 \cdot a^2 \cdot a = a^4 \cdot a^2 \cdot a^1 = a^{4+2+1} = a^7$ Pazi $a = a^1$

Dosta često radite ovakve greške:

$$\left. \begin{array}{l} a^4 \cdot a^2 \cdot a = a^{4+2} = a^6 \\ a^4 \cdot a^2 \cdot a = a^{4+2+0} = a^6 \end{array} \right\} \text{što nije točno jer je: } a = a^1$$

14) $a^2 \cdot a^5 \cdot a^7 \cdot a^3 = a^{2+5+7+3} = a^{17}$

15) $a^{3x} \cdot a^{x+2} \cdot a^{2x} = a^{3x+x+2+2x} = a^{6x+2}$

16) $a^{x+y} \cdot a^{2x} \cdot a^{x+3y} = a^{x+y+2x+x+3y} = a^{x+2x+x+y+3y} = a^{4x+4y}$

17) $-2 \cdot x \cdot 6 \cdot x^3 \cdot 3 \cdot x^4 = -2 \cdot 6 \cdot 3 \cdot x^1 \cdot x^3 \cdot x^4 = -36 \cdot x^{1+3+4} = -36x^8$

24. Koristimo pravila: $a^n \cdot a^m = a^{n+m}$ $a^n : a^m = a^{n-m}$ $\frac{a^n}{a^m} = a^n : a^m = a^{n-m}$

24.rješenj od 18) do 32) zadatka naručite preko maila !

$$\begin{aligned}
 33) \quad (x+y)^2 \cdot (x-y)^3 \cdot (x+y)^{2m-1} \cdot (x-y)^{m-3} &= (x+y)^2 \cdot (x+y)^{2m-1} \cdot (x-y)^3 \cdot (x-y)^{m-3} = \\
 &= (x+y)^{2+2m-1} \cdot (x-y)^{3+m-3} = \\
 &= (x+y)^{2m+2-1} \cdot (x-y)^{m+3-3} = \\
 &= (x+y)^{2m+1} \cdot (x-y)^m
 \end{aligned}$$

$$\begin{aligned}
 34) \quad \left(\frac{ab^2}{c}\right)^{3x-2y} \cdot \left(\frac{ab^2}{c}\right)^{4x-y} \cdot \left(\frac{ab^2}{c}\right)^{x-y} \cdot \left(\frac{ab^2}{c}\right)^{3y-2x} &= \left(\frac{ab^2}{c}\right)^{3x-2y+4x-y+x-y+3y-2x} = \\
 &= \left(\frac{ab^2}{c}\right)^{3x+4x+x-2x-2y-y-y+3y} = \\
 &= \left(\frac{ab^2}{c}\right)^{6x-y}
 \end{aligned}$$

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Novo **MALA ŠKOLA MATEMATIKE –1** na



BESPLATNA video poduka i instrukcije

UČIMO ZAJEDNO

POTENCIJE

ALGEBARSKI IZRAZI

ALGEBARSKI RAZLOMCI

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25. Koristimo pravila: $a^n \cdot a^m = a^{n+m}$ $a^n : a^m = a^{n-m}$ $\frac{a^n}{a^m} = a^n : a^m = a^{n-m}$

$$\begin{aligned} 1) \quad 2x^2y \cdot 3x^2y^3 &= 2 \cdot 3 \cdot x^2 \cdot x^2 \cdot y \cdot y^3 = \\ &= 6 \cdot x^{2+2} \cdot y^{1+3} = \\ &= 6x^4y^4 \end{aligned}$$

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 ili
 direktni link na : [video uputu ...uz 25. zadatak](#)

$$\begin{aligned} 2) \quad 5x^3y^2 \cdot 2x^5y^3 &= 5 \cdot 2 \cdot x^3 \cdot x^5 \cdot y^2 \cdot y^3 = \\ &= 10 \cdot x^{3+5} \cdot y^{2+3} = \\ &= 10x^8y^5 \end{aligned}$$

$$\begin{aligned} 3) \quad \frac{2}{3}a^2b^3 \cdot \frac{9}{4}ab^4 &= \frac{2}{3} \cdot \frac{9}{4} \cdot a^2 \cdot a \cdot b^3 \cdot b^4 = \\ &= \frac{\cancel{2} \cdot \cancel{3} \cdot 3}{\cancel{3} \cdot \cancel{2}} \cdot a^2 \cdot a^1 \cdot b^{3+4} = \\ &= \frac{3}{2} \cdot a^{2+1} \cdot b^7 \\ &= \frac{3}{2}a^3b^7 \end{aligned}$$

$$\begin{aligned} 4) \quad -\frac{5}{27}a^6b^2 \cdot \left(-\frac{9}{5}a^2b\right) &= -\frac{5}{27} \cdot \left(-\frac{9}{5}\right) \cdot a^6 \cdot a^2 \cdot b^2 \cdot b = \\ &= +\frac{\cancel{5} \cdot \cancel{9}}{3 \cdot \cancel{9}} \cdot a^{6+2} \cdot b^{2+1} = \\ &= \frac{1}{3}a^8b^3 \end{aligned}$$

$$\begin{aligned} 5) \quad \frac{1}{2}a^2b^3c^4 \cdot (-4a^3b^2c^5) &= \frac{1}{2} \cdot (-4) \cdot a^2 \cdot a^3 \cdot b^3 \cdot b^2 \cdot c^4 \cdot c^5 = \\ &= -\frac{4}{2} \cdot a^{2+3} \cdot b^{3+2} \cdot c^{4+5} = \\ &= -2a^5b^5c^9 \end{aligned}$$

$$\begin{aligned} 6) \quad 9x^4y^2 \cdot \frac{1}{3}x^2y &= 9 \cdot \frac{1}{3} \cdot x^4 \cdot x^2 \cdot y^2 \cdot y^1 = \\ &= 3 \cdot 3 \cdot \frac{1}{3} \cdot x^{4+2} \cdot y^{2+1} = \\ &= 3 \cdot x^6 \cdot y^3 = 3x^6y^3 \end{aligned}$$

25. Koristimo pravila: $a^n \cdot a^m = a^{n+m}$ $a^n : a^m = a^{n-m}$ $\frac{a^n}{a^m} = a^n : a^m = a^{n-m}$

Rješenja ZADATAKA 7), 8) , 9) , 10) - šaljemo mailom

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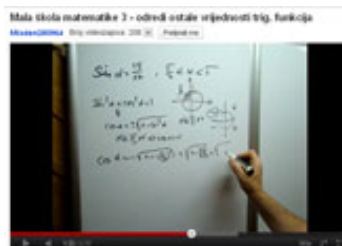


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MALA ŠKOLA MATEMATIKE



DODATNE UPUTE UZ OVE ZADATK
POTENCIJE
ALGEBARSKI IZRAZI
ALGEBARSKI RAZLOMCI



26. U slijedećim zadacima koristimo pravilo: $a^n : a^m = a^{n-m}$

$$1) 2^9 : 2^5 = 2^{9-5} = 2^4 = 2^4 = 2 \cdot 2 \cdot 2 \cdot 2 = 16$$

$$2) 13^7 : 13^5 = 13^{7-5} = 13^2 = 169$$

$$3) 3^{5x} : 3^{3x} = 3^{5x-3x} = 3^{2x}$$

$$4) 5^{3m-2} : 5^{m-2} = 5^{3m-2-(m-2)} = 5^{3m-2-m+2} = 5^{3m-m+2-2} = 5^{2m}$$

↓

Pazi: drugi eksponent se mora staviti u zagradu...vrlo često radite ovakvu grešku:

$$5^{3m-2} : 5^{m-2} = 5^{3m-2-m-2} = 5^{3m-m-2-2} = 5^{2m-4} \rightarrow \text{što nije točno!}$$

↓

Ovdje je pogreška u predznaku kod zadnjeg člana, jer prvom promjenite predznak, a drugom ne, to se događa zbog toga što radite napamet... tj. preskaćete korake...

Preporuka: čim imamo višečlane eksponente koristite zagrade i ne preskaćite korake...

$$5) x^4 : x^2 = x^{4-2} = x^2$$

$$6) x^6 : x^2 = x^{6-2} = x^4$$

$$7) x^7 : x^2 : x^3 = x^{7-2-3} = x^2$$

$$8) x^7 \cdot x^3 : x^4 = x^{7+3-4} = x^6$$

$$9) x : x^2 = x^1 : x^2 = x^{1-2} = x^{-1} = \frac{1}{x}$$

$$10) x^2 : x^2 = x^{2-\frac{1}{2}} = x^{\frac{2 \cdot 2 - 1}{2}} = x^{\frac{4-1}{2}} = x^{\frac{3}{2}}$$

$$11) x^{\frac{7}{9}} : x^{\frac{1}{3}} = x^{\frac{7}{9} - \frac{1}{3}} = x^{\frac{7-1 \cdot 3}{9}} = x^{\frac{7-3}{9}} = x^{\frac{4}{9}}$$

$$12) x^{\frac{2}{5}} : x^2 : x^{\frac{1}{2}} = x^{\frac{2}{5} - 2 - \frac{1}{2}} = x^{\frac{2 \cdot 2 - 2 \cdot 10 - 1 \cdot 5}{10}} = x^{\frac{4-20-5}{10}} = x^{-\frac{21}{10}}$$

$$13) a^{4x} : a^{2x} = a^{4x-2x} = a^{2x}$$

$$14) a^8 : a^3 : a^2 = a^{8-3-2} = a^3$$

$$15) a : a^2 : a^3 = a^1 : a^2 : a^3 = a^{1-2-3} = a^{-4} \quad \text{ili} = \frac{1}{a^4}$$

$$16) a^7 : a^2 \cdot a^3 = a^{7-2+3} = a^8$$

U slijedećim zadacima koristimo pravilo: $\frac{a^n}{a^m} = a^n : a^m = a^{n-m}$

$$17) \frac{x^5}{x^2} = x^5 : x^2 = x^{5-2} = x^3$$

$$18) \frac{x^8}{x^3} = x^8 : x^3 = x^{8-3} = x^5$$

$$19) \frac{x^{\frac{3}{2}}}{x} = x^{\frac{3}{2}} : x^1 = x^{\frac{3}{2}-1} = x^{\frac{3-2}{2}} = x^{\frac{1}{2}}$$

$$20) \frac{x^{\frac{7}{4}}}{x^{\frac{1}{3}}} = x^{\frac{7}{4}} : x^{\frac{1}{3}} = x^{\frac{7}{4} - \frac{1}{3}} = x^{\frac{7 \cdot 3 - 1 \cdot 4}{12}} = x^{\frac{21-4}{12}} = x^{\frac{17}{12}}$$

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26. U slijedećim zadacima koristimo pravilo: $\frac{a^n}{a^m} = a^n : a^m = a^{n-m}$

Rješenja ZADATAKA od 21) do 31) šaljem u besplatnom PDF dokumentu samo na zahtjev upućem mailom !

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MALA ŠKOLA MATEMATIKE



DODATNE UPUTE UZ OVE ZADATK

POTENCIJE

ALGEBARSKI IZRAZI

ALGEBARSKI RAZLOMCI

27. Koristimo pravila: $(ab)^n = a^n b^n$ $(abc)^n = a^n b^n c^n$ $(a^n)^m = a^{n \cdot m}$ $\left((a^n)^m\right)^z = a^{n \cdot m \cdot z}$

Pojavio nam se jedan problem a taj je: $(-x)^n$ vidi zadatke: 7),13),14),15),16),17),18),19),23),24)...

Pogledajmo opet u 22. zadatak kako smo to tamo riješili:

$$\left. \begin{array}{l} 22. \quad 4) \quad (-1)^2 = (-1) \cdot (-1) = 1 \\ \quad \quad 5) \quad (-1)^3 = (-1) \cdot (-1) \cdot (-1) = -1 \\ \quad \quad 6) \quad (-1)^4 = (-1) \cdot (-1) \cdot (-1) \cdot (-1) = 1 \end{array} \right\} \text{ Zaključak: } \begin{array}{l} (-1)^{\text{na parni eksponent}} = 1 \\ (-1)^{\text{na neparni eksponent}} = -1 \end{array}$$

$$7) \quad (-2)^3 = \underbrace{(-2) \cdot (-2) \cdot (-2)} = -8$$

Imamo neparan broj "minusa" pa će i umnožak biti negativno tj. imati će predznak minus

$$8) \quad (-x)^4 = \underbrace{(-x) \cdot (-x) \cdot (-x) \cdot (-x)} = x^4$$

Imamo paran broj "minusa" pa
je produkt pozitivan broj

Sada se javlja ovakav problem: $(-x)^{53} = \underbrace{(-x) \cdot (-x) \cdot \dots \cdot (-x)}_{53 \text{ puta bi to trebali napisati a to je previše pisanja pa ćemo rađe gledati eksponent}}$ = u eksponentu je 53 ,

53 je neparan broj pa je: $(-x)^{53} = -x^{53}$

dalje logički je pitanje koliko je $(-x)^{54}$? eksponent je 54, 54 je paran broj pa je: $(-x)^{54} = x^{54}$

$(-x)^{55} = -x^{55}$ jer je eksponent = 55, a 55 je neparan broj

$(-x)^{56} = x^{56}$ jer je eksponent = 56, a 56 je paran broj

Zaključak: $\begin{array}{l} (-x)^{\text{na parni eksponent}} = x^{\text{parnu}} \\ (-x)^{\text{na neparni eksponent}} = -x^{\text{neparnu}} \end{array}$ ili $\begin{array}{l} (-x)^{2n} = x^{2n} \\ (-x)^{2n+1} = -x^{2n+1} \end{array}$

$2n$ je oznaka za parni broj

$2n+1$ je oznaka za neparan broj

Sada to primjenimo u zadatcima:

22. 8) $(-x)^4 = x^4$ zato što je eksponent = 4, a 4 je paran broj

7) $(-2)^3 = -2^3 = -8$ zato što je eksponent = 3, a 3 je neparan broj

Postoji i drugi način rješavanja ovakvih zadataka:

II način

$$7) \quad (-2)^3 = (-1 \cdot 2)^3 = (-1)^3 \cdot 2^3 = -1 \cdot 8 = -8$$

$$\underbrace{(-2)^3}_{\text{Svaki negativan broj } (-x) \text{ da se zapisati u obliku: } (-x) = (-1 \cdot x)} = (-1 \cdot 2)^3 = (-1)^3 \cdot 2^3 = -1 \cdot 8 = -8$$

Svaki negativan broj $(-x)$
da se zapisati u obliku:
 $(-x) = (-1 \cdot x)$

$$8) \quad (-x)^4 = (-1 \cdot x)^4 = (-1)^4 \cdot x^4 = 1 \cdot x^4 = x^4 \quad \text{II način}$$

27. Koristimo pravila:

$$(ab)^n = a^n b^n \quad (abc)^n = a^n b^n c^n \quad (a^n)^m = a^{n \cdot m} \quad \left((a^n)^m \right)^z = a^{n \cdot m \cdot z}$$

$(ab)^n = a^n b^n$ Postupili smo prema prvom pravilu...

$$\begin{matrix} \updownarrow & \updownarrow \end{matrix}$$

1) $(2x)^2 = 2^2 \cdot x^2 = 4 \cdot x^2 = 4x^2$

2) $(3x)^2 = 3^2 \cdot x^2 = 9 \cdot x^2 = 9x^2$

3) $\left(\frac{3}{4}x^2y^3\right)^2 = \left(\frac{3}{4}\right)^2 \cdot (x^2)^2 \cdot (y^3)^2 = \frac{3^2}{4^2} \cdot x^{2 \cdot 2} \cdot y^{3 \cdot 2} = \frac{9}{16}x^4y^6$

$$(abc)^n = a^n b^n c^n$$

$$(a^n)^m = a^{n \cdot m}$$

Postupili smo prema drugom i trećem pravilu...

4) $\left(\frac{2}{3}xy^2\right)^3 = \left(\frac{2}{3}\right)^3 \cdot x^3 \cdot (y^2)^3 = \frac{2^3}{3^3} \cdot x^3 \cdot y^{2 \cdot 3} = \frac{8}{27}x^3y^6$

5) $\left(\frac{1}{2}x^2y^3\right)^4 = \left(\frac{1}{2}\right)^4 \cdot (x^2)^4 \cdot (y^3)^4 = \frac{1^4}{2^4} \cdot x^{2 \cdot 4} \cdot y^{3 \cdot 4} = \frac{1}{16}x^8y^{12}$

6) $(x^2)^2 = x^{2 \cdot 2} = x^4$

7) $(-x^2)^2 = (x^2)^2 = x^{2 \cdot 2} = x^4$ I način

II način:

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

8) $(x^2)^3 = x^{2 \cdot 3} = x^6$

9) $(x^2)^5 = x^{2 \cdot 5} = x^{10}$

Prema pravilu: $(a^n)^m = a^{n \cdot m}$

10) $(2x^3y^4)^2 = 2^2 \cdot (x^3)^2 \cdot (y^4)^2 = 4 \cdot x^{3 \cdot 2} \cdot y^{4 \cdot 2} = 4x^6y^8$

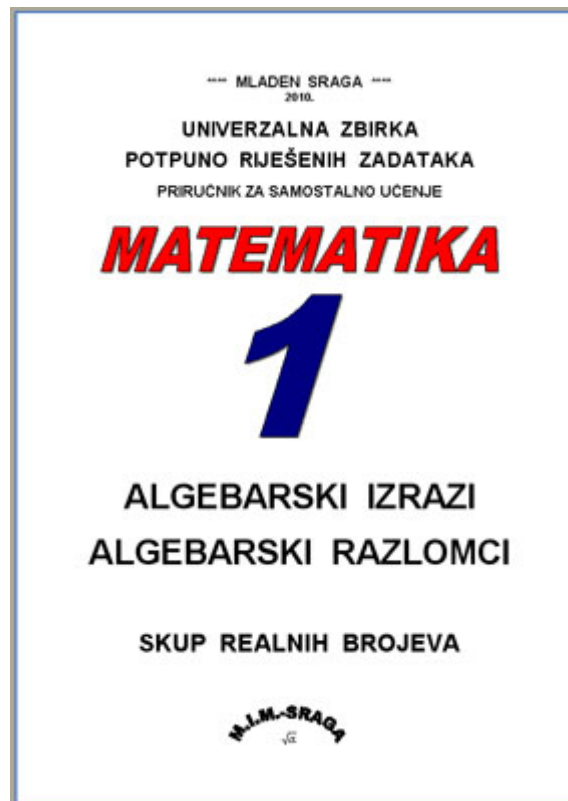
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27.

Rješenja ovog ZADATKA od 25) do 53) šaljem u besplatnom PDF dokumentu samo na zahtjev upućem mailom !

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1. javite nam se mailom na: mim-sraga@zg.htnet.hr
2. nazovite nas na telefon 01-4578-431
3. nazovite nas na mobitem 098-237-534
4. pošaljite nam pismo na . M.I.M.-Sraga centar za poduku i dopisnu poduku , Kraljevečki ogranak 24 , Zagreb

28. Koristimo pravilo: $a^n \cdot b^n = (a \cdot b)^n$ $a^n b^n c^n = (abc)^n$

$$1) 2^x \cdot 5^x = (2 \cdot 5)^x = 10^x$$

$$2) 3^x \cdot 4^x = (3 \cdot 4)^x = 12^x$$

$$3) 4^a \cdot 6^a = (4 \cdot 6)^a = 24^a$$

$$4) 2^y \cdot 4^y = (2 \cdot 4)^y = 8^y$$

$$5) 3^5 \cdot 2^5 = (3 \cdot 2)^5 = 15^5$$

$$6) \left(\frac{1}{3}\right)^3 \cdot 9^3 = \left(\frac{1}{3} \cdot 9\right)^3 = \left(\frac{9}{3}\right)^3 = \left(\frac{3 \cdot \cancel{3}}{\cancel{3}}\right)^3 = 3^3 = 27$$

$$7) \left(\frac{3}{2}\right)^4 \cdot \left(\frac{2}{3}\right)^4 = \left(\frac{3}{2} \cdot \frac{2}{3}\right)^4 = \left(\frac{\cancel{3}^1 \cdot \cancel{2}_1}{\cancel{2}_1 \cdot \cancel{3}_1}\right)^4 = \left(\frac{1}{1}\right)^4 = 1^4 = 1$$

$$8) \left(\frac{1}{2}\right)^5 \cdot 4^5 = \left(\frac{1}{2} \cdot 4\right)^5 = \left(\frac{4}{2}\right)^5 = 2^5 = 32$$

$$9) \left(\frac{2}{3}\right)^5 \cdot \left(\frac{9}{2}\right)^5 = \left(\frac{2}{3} \cdot \frac{9}{2}\right)^5 = \left(\frac{\cancel{2} \cdot \cancel{3} \cdot 3}{\cancel{3} \cdot \cancel{2}}\right)^5 = 3^5 = 243$$

$$10) \left(\frac{ac}{b}\right)^2 \cdot \left(\frac{b}{c}\right)^2 = \left(\frac{a \cdot c}{b} \cdot \frac{b}{c}\right)^2 = a^2$$

$$11) \left(\frac{a}{b}\right)^4 \cdot \left(\frac{b}{a}\right)^4 = \left(\frac{a}{b} \cdot \frac{b}{a}\right)^4 = 1^4 = 1$$

$$12) \left(\frac{3}{4}\right)^3 \cdot \left(\frac{8}{3}\right)^3 = \left(\frac{3}{4} \cdot \frac{8}{3}\right)^3 = \left(\frac{3 \cdot 4 \cdot 2}{4 \cdot 3}\right)^3 = 2^3 = 8$$

$$13) \left(\frac{xy}{2}\right)^2 \cdot \left(\frac{4}{x^2 y}\right)^2 = \left(\frac{xy}{2} \cdot \frac{4}{x^2 y}\right)^2 = \left(\frac{x \cdot y}{2} \cdot \frac{2 \cdot 2}{x \cdot x \cdot y}\right)^2 = \left(\frac{2}{x}\right)^2 = \text{možemo ostaviti u ovom obliku}$$

$$\text{ili dalje:} \quad = \frac{2^2}{x^2} = \frac{4}{x^2}$$

$$14) \left(\frac{xy}{z}\right)^3 \cdot \left(\frac{x}{yz}\right)^3 = \left(\frac{xy}{z} \cdot \frac{x}{yz}\right)^3 = \text{nakon kraćenja} = \left(\frac{x \cdot x}{z \cdot z}\right)^3 = \left(\frac{x^2}{z^2}\right)^3 = \frac{(x^2)^3}{(z^2)^3} = \frac{x^{2 \cdot 3}}{z^{2 \cdot 3}} = \frac{x^6}{z^6}$$

$$15) \left(\frac{xy}{z}\right)^{m+1} \cdot \left(\frac{x}{yz}\right)^{m+1} = \left(\frac{xy}{z} \cdot \frac{x}{yz}\right)^{m+1} = \text{nakon kraćenja} = \\ = \left(\frac{x \cdot x}{z \cdot z}\right)^{m+1} = \left(\frac{x^2}{z^2}\right)^{m+1} = \frac{(x^2)^{m+1}}{(z^2)^{m+1}} = \frac{x^{2 \cdot (m+1)}}{z^{2 \cdot (m+1)}} = \frac{x^{2m+2}}{z^{2m+2}}$$

29. Koristimo pravila: $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$ $\left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n = \frac{b^n}{a^n}$

Izračunaj:

$$1) \left(\frac{2}{3}\right)^2 = \frac{2^2}{3^2} = \frac{4}{9} \quad \text{primjenili smo pravilo: } \left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$

$$2) \left(\frac{2}{3}\right)^{-2} = \left(\frac{3}{2}\right)^2 = \frac{3^2}{2^2} = \frac{9}{4}$$

uputa: 2) $\underbrace{\left(\frac{2}{3}\right)^{-2}}_{\substack{\text{po pravilu} \\ \left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n}} = \left(\frac{3}{2}\right)^2 = \frac{3^2}{2^2} = \frac{9}{4}$

po pravilu: $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$

$$3) \left(\frac{1}{2}\right)^3 = \frac{1^3}{2^3} = \frac{1}{8} \quad \text{primjenili smo pravilo: } \left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$

$$4) \left(\frac{2}{3}\right)^4 = \frac{2^4}{3^4} = \frac{16}{81} \quad \text{primjenili smo pravilo: } \left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$

$$5) \left(\frac{5}{7}\right)^{-1} = \left(\frac{7}{5}\right)^1 = \frac{7}{5} \quad \text{primjenili smo pravilo: } \left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n = \frac{b^n}{a^n}$$

$$6) \left(1\frac{2}{7}\right)^{-1} = \left(\frac{1\cdot 7 + 2}{7}\right)^{-1} = \left(\frac{9}{7}\right)^{-1} = \frac{7}{9} \quad \rightarrow \text{mješoviti broj treba prvo pretvoriti u razlomak...}$$

$$7) \left(\frac{4}{5}\right)^{-2} = \left(\frac{5}{4}\right)^2 = \frac{5^2}{4^2} = \frac{25}{16}$$

$$8) \left(\frac{2}{3}\right)^{-3} = \left(\frac{3}{2}\right)^3 = \frac{3^3}{2^3} = \frac{27}{8}$$

$$9) \left(2\frac{1}{3}\right)^{-2} = \left(\frac{2\cdot 3 + 1}{3}\right)^{-2} = \left(\frac{6+1}{3}\right)^{-2} = \left(\frac{7}{3}\right)^{-2} = \left(\frac{3}{7}\right)^2 = \frac{3^2}{7^2} = \frac{9}{49}$$

↕ → mješoviti broj treba prvo pretvoriti u razlomak...

$$10) \left(1\frac{2}{7}\right)^{-2} = \left(\frac{1\cdot 7 + 2}{7}\right)^{-2} = \left(\frac{7+2}{7}\right)^{-2} = \left(\frac{9}{7}\right)^{-2} = \left(\frac{7}{9}\right)^2 = \frac{7^2}{9^2} = \frac{49}{81}$$

29. Koristimo pravila: $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$ $\left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n = \frac{b^n}{a^n}$

mješoviti broj treba prvo pretvoriti u razlomak...

$$11) \left(1\frac{1}{2}\right)^{-3} = \left(\frac{1\cdot 2 + 1}{2}\right)^{-3} = \left(\frac{2+1}{2}\right)^{-3} = \left(\frac{3}{2}\right)^{-3} = \left(\frac{2}{3}\right)^3 = \frac{2^3}{3^3} = \frac{8}{27}$$

$$12) \left(\frac{3}{4}\right)^{-2} = \left(\frac{4}{3}\right)^2 = \frac{4^2}{3^2} = \frac{16}{9}$$

$$13) \left(\frac{x}{y}\right)^2 = \frac{x^2}{y^2}$$

14) I način koristimo pravilo:

$(-x)^{\text{na parni eksponent}} = x^{\text{parnu}}$
$(-x)^{\text{na neparni eksponent}} = -x^{\text{neparnu}}$

 pa je:

$$14) \left(-\frac{x}{y}\right)^2 = \left(\frac{x}{y}\right)^2 = \frac{x^2}{y^2} \quad \text{jer je: } \left(-\frac{x}{y}\right)^2 = \left(-\frac{x}{y}\right)^{\text{parnu}} = \left(\frac{x}{y}\right)^{\text{parnu}} = \left(\frac{x}{y}\right)^2 = \dots$$

$$14) \left(-\frac{x}{y}\right)^2 = \left(-1 \cdot \frac{x}{y}\right)^2 = (-1)^2 \cdot \left(\frac{x}{y}\right)^2 = 1 \cdot \frac{x^2}{y^2} = \frac{x^2}{y^2} \quad \text{II način}$$

II način $\left(-\frac{x}{y}\right)$ rastavili smo na: $\left(-1 \cdot \frac{x}{y}\right) \dots$

29. Koristimo pravila: $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$ $\left(\frac{a}{b}\right)^{-n} = \left(\frac{b}{a}\right)^n = \frac{b^n}{a^n}$

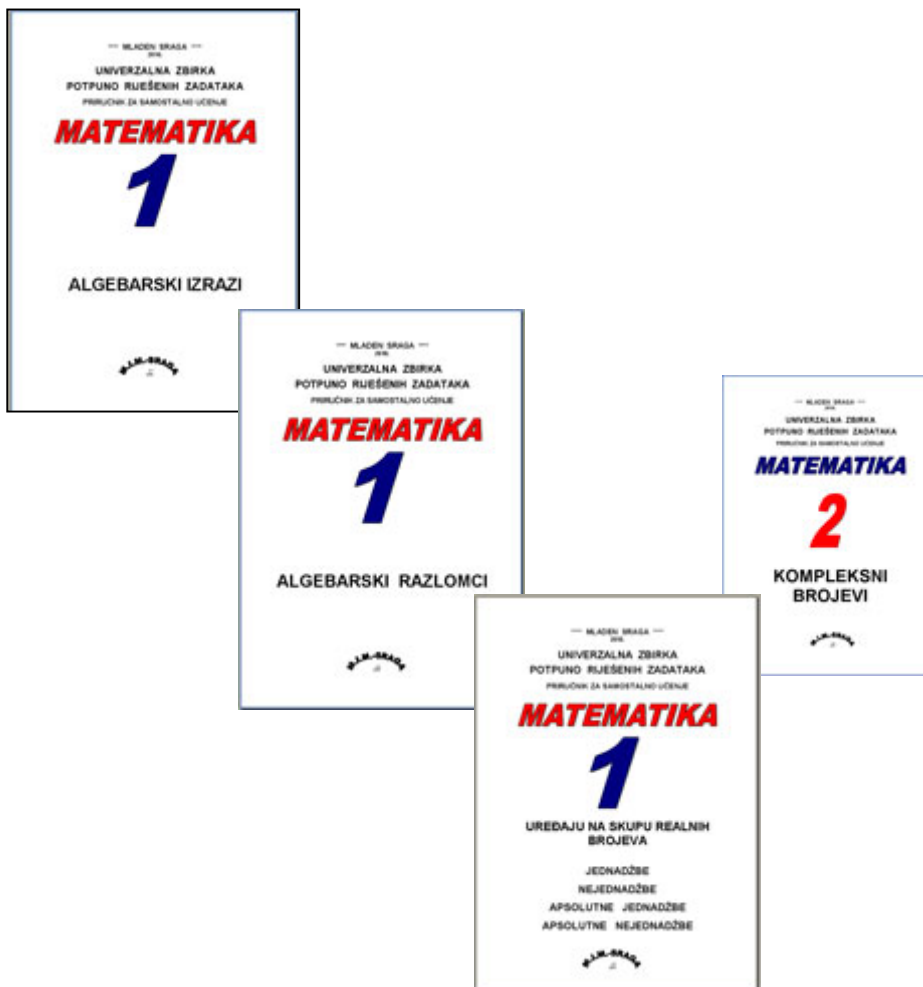
Rješenja ovog ZADATKA od 15) do 27) šaljem u besplatnom PDF dokumentu samo na zahtjev upućem mailom !

Rješenja ovog ZADATKA od 28) pa do 40)

mogu se nabaviti samo u štampanoj (prodajnoj) varijante ove zbirke !

Ako trebate preostala rješenja ovog zadatka pošaljite nam poruku na:
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30. Koristimo pravila: $a^0 = 1$, $a^1 = a$, $a^{-1} = \frac{1}{a}$, $a^{-n} = \frac{1}{a^n}$

1) $2^0 = 1$ po pravilu: $a^0 = 1$

2) $x^0 = 1$

3) $\left(\frac{x^2 y^4}{z}\right)^0 = 1$ $\left\{ \begin{array}{l} \text{bez obzira što je u zagradi ako je eksponent} \\ \text{te zagrade nula sve je jednako jedan !} \end{array} \right.$

3) ili taj isti zadatak dužim postupkom: $\left(\frac{x^2 y^4}{z}\right)^0 = \frac{(x^2)^0 \cdot (y^4)^0}{z^0} = \frac{1 \cdot 1}{1} = \frac{1}{1} = 1$

4) $x^0 + y^0 = 1 + 1 = 2$

5) $3^0 = 1$

6) $(-3)^0 = 1$ po pravilu: $a^0 = 1$

7) $-3^0 = -1$ zato što je: $-3^0 = -1 \cdot 3^0 = -1 \cdot 1 = -1$

8) $-3x^0 = -3 \cdot 1 = -3$

9) $(x + y)^0 = 1$ bez obzira što je u zagradi ako je to na nultu sve je jednako jedan !

10) $(2x - 7y)^0 = 1$ $\left\{ \begin{array}{l} \text{bez obzira što je u zagradi ako je eksponent} \\ \text{te zagrade nula sve je jednako jedan !} \end{array} \right.$

11) $x^0 - 2y^0 + 7z^0 = 1 - 2 \cdot 1 + 7 \cdot 1 = 1 - 2 + 7 = 6$

12) $x^0 - (2y)^0 + (7z)^0 = 1 - 1 + 1 = 1$

13) $x^0 \cdot x^0 = 1 \cdot 1 = 1$

14) $(x^0)^2 = 1^2 = 1$

30. Koristimo pravila: $a^0 = 1$, $a^1 = a$, $a^{-1} = \frac{1}{a}$, $a^{-n} = \frac{1}{a^n}$

$$13) x^0 \cdot x^0 = 1 \cdot 1 = 1$$

$$14) (x^0)^2 = 1^2 = 1$$

$$15) (x^m)^0 = 1 \quad \text{bez obzira što je u zagradi ako je to na nuultu sve je jednako jedan !}$$

$$16) (4x)^0 = 1$$

$$17) 5^{-1} = \frac{1}{5} \quad \text{po pravilu: } a^{-1} = \frac{1}{a}$$

$$18) x^{-1} = \frac{1}{x}$$

$$19) 0,2^{-1} = \left(\frac{2}{10}\right)^{-1} = \left(\frac{1}{5}\right)^{-1} = \frac{5}{1} = 5 \quad \text{prvo decimalni broj pretvorimo u razlomak...}$$

$$20) (x-y)^{-1} = \frac{1}{(x-y)^1} = \frac{1}{x-y} \quad \text{po pravilu: } a^{-n} = \frac{1}{a^n}$$

$$21) 3^{-2} = \frac{1}{3^2} = \frac{1}{9} \quad \text{po pravilu: } a^{-n} = \frac{1}{a^n}$$

$$22) x^{-3} = \frac{1}{x^3}$$

$$23) 0,3^{-2} = \left(\frac{3}{10}\right)^{-2} = \left(\frac{10}{3}\right)^2 = \frac{10^2}{3^2} = \frac{100}{9}$$

$$24) (2x-5)^{-5} = \frac{1}{(2x-5)^5}$$

$$25) 4^{-1} = \frac{1}{4}$$

30. Koristimo pravila: $a^0 = 1$, $a^1 = a$, $a^{-1} = \frac{1}{a}$, $a^{-n} = \frac{1}{a^n}$

Rješenja ovog ZADATKA od 26) do 41) šaljem u besplatnom PDF dokumentu samo na zahtjev upućem mailom !

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sa tekstom : Trebam preostala rješenja zadataka iz zbirke POTENCIJE**

Rješenja ovog ZADATKA od 42) pa do 57) mogu se nabaviti samo u štampanoj (prodajnoj) varijante ove zbirke !

31.

a) Zapiši u obliku potencija s bazom 2:

1) $4 \cdot 32 \cdot 16 = 2^2 \cdot 2^5 \cdot 2^4 = 2^{2+5+4} = 2^{11}$

2) $(4 \cdot 8 \cdot 16)^2 = (2^2 \cdot 2^3 \cdot 2^4)^2 = (2^{2+3+4})^2 = (2^9)^2 = 2^{9 \cdot 2} = 2^{18}$

Preostala rješenja ovog ZADATKA

mogu se nabaviti samo u štampanoj (prodajnoj) varijante ove zbirke !

32.

$$1) \left(\frac{9}{2} x^6 y^5 \right) : \left(\frac{3}{2} x^4 y^3 \right) = \frac{\frac{9}{2} x^6 y^5}{\frac{3}{2} x^4 y^3} = \frac{9}{2} : \frac{3}{2} \cdot x^6 : x^4 \cdot y^5 : y^3 = \frac{9}{2} \cdot \frac{2}{3} \cdot x^{6-4} \cdot y^{5-3} =$$

$$= \frac{9}{2} \cdot \frac{2}{3} \cdot x^{6-4} \cdot y^{5-3} = \frac{3 \cdot \cancel{2}}{\cancel{2}} \cdot \frac{\cancel{2}}{\cancel{3}} \cdot x^2 \cdot y^2 = 3x^2 y^2$$

Preostala rješenja ovog ZADATKA

mogu se nabaviti samo u štampanoj (prodajnoj) varijante ove zbirke !

33.

$$1) \frac{16 \cdot 2^{x+1}}{8^{x-1}} = \frac{2^4 \cdot 2^{x+1}}{(2^3)^{x-1}} = \frac{2^{4+x+1}}{2^{3(x-1)}} = \frac{2^{x+5}}{2^{3x-3}} =$$

$$= 2^{x+5} : 2^{3x-3} = 2^{x+5-(3x-3)} = 2^{x+5-3x+3} = 2^{x-3x+5+3} = 2^{-2x+8} = 2^{8-2x}$$

Preostala rješenja ovog ZADATKA

mogu se nabaviti samo u štampanoj (prodajnoj) varijante ove zbirke !

34.

$$1) \left(\frac{x^{-2}}{y^{-3}}\right)^{-2} \cdot \left(\frac{x^4}{y^2}\right)^2 = \left(\frac{y^3}{x^2}\right)^{-2} \cdot \frac{(x^4)^2}{(y^2)^2} = \left(\frac{x^2}{y^3}\right)^2 \cdot \frac{x^{4 \cdot 2}}{y^{2 \cdot 2}} = \frac{(x^2)^2}{(y^3)^2} \cdot \frac{x^8}{y^4} = \frac{x^4}{y^6} \cdot \frac{x^8}{y^4} = \frac{x^{4+8}}{y^{6+4}} = \frac{x^{12}}{y^{10}}$$

Preostala rješenja ovog ZADATKA

mogu se nabaviti samo u štampanoj (prodajnoj) varijante ove zbirke !

35.

$$4) (4ab^2)^2 = 4^2 \cdot a^2 \cdot (b^2)^2 = 16 \cdot a^2 \cdot b^{2 \cdot 2} = 16a^2b^4$$

$$\begin{aligned} 6) (3x^2 + y^3)^2 &= (3x^2)^2 + 2 \cdot 3x^2 \cdot y^3 + (y^3)^2 = \\ &= 3^2 \cdot (x^2)^2 + 6x^2y^3 + y^{3 \cdot 2} = \\ &= 9 \cdot x^{2 \cdot 2} + 6x^2y^3 + y^6 = \\ &= 9x^4 + 6x^2y^3 + y^6 \end{aligned}$$

Preostala rješenja ovog ZADATKA

mogu se nabaviti samo u štampanoj (prodajnoj) varijante ove zbirke !



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MALA ŠKOLA MATEMATIKE



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36.

$$23) (a^2b^3)^4 \cdot (a^2b^4)^3 = (a^2)^4 \cdot (b^3)^4 \cdot (a^2)^3 \cdot (b^4)^3 = a^{2 \cdot 4} \cdot b^{3 \cdot 4} \cdot a^{2 \cdot 3} \cdot b^{4 \cdot 3} = a^8 \cdot b^{12} \cdot a^6 \cdot b^{12} = \\ = a^8 \cdot a^6 \cdot b^{12} \cdot b^{12} = a^{8+6} \cdot b^{12+12} = a^{14}b^{24}$$

Preostala rješenja ovog ZADATKA

moгу se nabaviti samo u štampanoj (prodajnoj) varijante ove zbirke !

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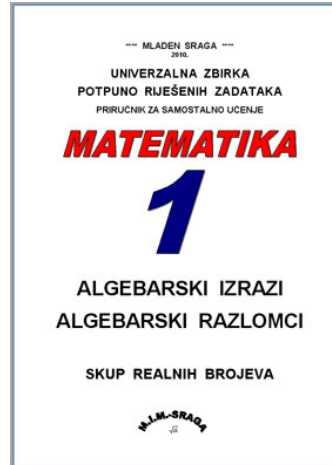
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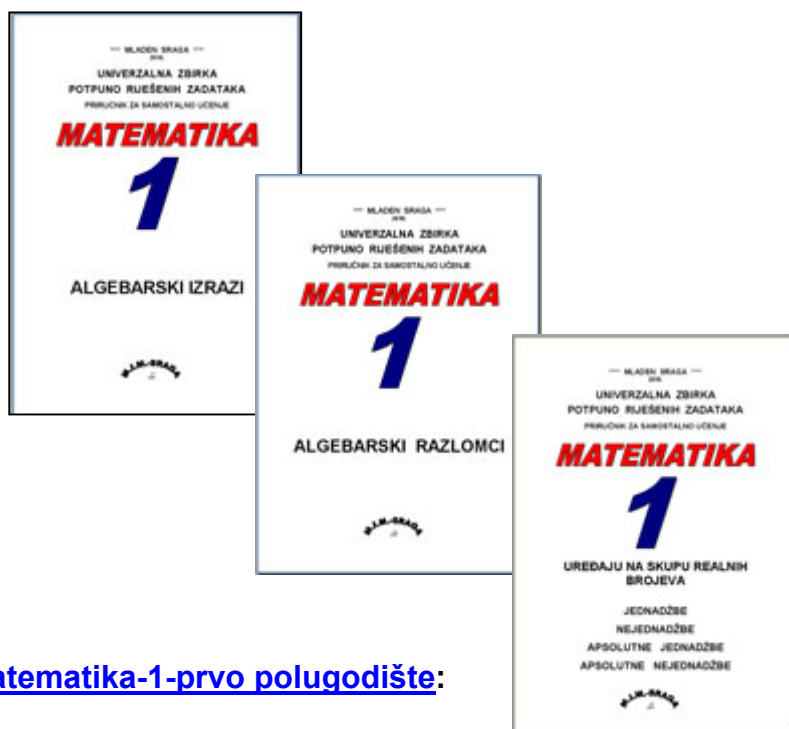
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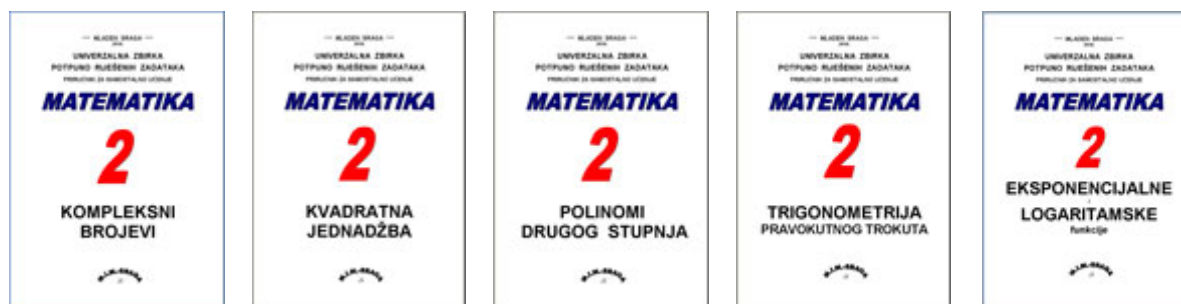
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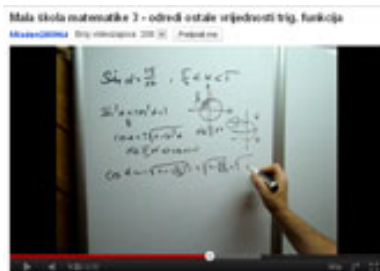
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