

**Prvi test iz POTENCIJA****Kompletna rješenja i upute:**

ovdje primjenimo pravilo:  $a^n : a^m = a^{n-m}$



$$1. \quad \left(\frac{3}{4}\right)^5 : \left(\frac{4}{3}\right)^{-3} = \left(\frac{3}{4}\right)^5 : \left(\frac{3}{4}\right)^3 = \left(\frac{3}{4}\right)^{5-3} = \left(\frac{3}{4}\right)^2 = \frac{3^2}{4^2} = \frac{9}{16}$$



UPUTA:  $\left(\frac{4}{3}\right)^{-3} = \left(\frac{4}{3}\right)^{-1 \cdot 3} = \left(\left(\frac{4}{3}\right)^{-1}\right)^3 = \left(\frac{3}{4}\right)^3$

2.

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

$$\begin{aligned} b) \quad 2x^2 y^3 z^4 \cdot (-3x^3 y^4 z^2) &= 2 \cdot (-3) \cdot x^2 \cdot x^3 \cdot y^3 \cdot y^4 \cdot z^4 \cdot z^2 = \\ &= -6 \cdot x^{2+3} \cdot y^{3+4} \cdot z^{4+2} = \\ &= -6 x^5 y^7 z^6 \end{aligned}$$

Ako vam ovo nisu dovoljno detaljne upute pogledajte video sa dodatnom uputom za rješavanje ovih zadataka ... link je [ovdje](#) !

3.

$$a) (2x-3y)^{2x+3y} : (2x-3y)^{2x+3y} = (2x-3y)^{2x+3y-(2x+3y)} = (2x-3y)^{2x+3y-2x-3y} = (2x-3y)^0 = 1$$

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

$$= \left(\frac{a^2b}{c^3}\right)^{x+3x-4x+4-2-3} =$$

$$= \left(\frac{a^2b}{c^3}\right)^{-1} \quad \text{ili} \quad = \left(\frac{c^3}{a^2b}\right)$$

U ovom slučaju možete ostaviti i lijevo rješenje...  
jer još nismo obradili pravilo: "na minus prvu"

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

$$a) \left(\frac{1}{2}x^2y^3\right)^3 \cdot (4x^3y^2)^3 = \left(\frac{1}{2}\right)^3 \cdot (x^2)^3 \cdot (y^3)^3 \cdot [4^3 \cdot (x^3)^3 \cdot (y^2)^3] =$$

$$= \frac{1^3}{2^3} \cdot x^{2 \cdot 3} \cdot y^{3 \cdot 3} \cdot (64 \cdot x^{3 \cdot 3} \cdot y^{2 \cdot 3}) =$$

$$= \frac{1}{8} \cdot x^6 \cdot y^9 \cdot (64 \cdot x^9 \cdot y^6) =$$

$$= \frac{1}{8} \cdot 64 \cdot x^6 \cdot x^9 \cdot y^9 \cdot y^6 =$$

$$= \frac{64}{8} \cdot x^{6+9} \cdot y^{9+6} =$$

$$= 8 \cdot x^{15} \cdot y^{15} =$$

$$= 8x^{15}y^{15}$$

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

$$\begin{aligned}
 b) \left(\frac{1}{2}x^2y^3\right)^3 : (4x^3y^2)^3 &= \left(\frac{1}{2}\right)^3 \cdot (x^2)^3 \cdot (y^3)^3 : \left[4^3 \cdot (x^3)^3 \cdot (y^2)^3\right] = \\
 &= \frac{1^3}{2^3} \cdot x^{2 \cdot 3} \cdot y^{3 \cdot 3} : (64 \cdot x^{3 \cdot 3} \cdot y^{2 \cdot 3}) = \\
 &= \frac{1}{8} \cdot x^6 \cdot y^9 : (64 \cdot x^9 \cdot y^6) = \\
 &= \frac{1}{8} : 64 \cdot x^6 : x^9 \cdot y^9 : y^6 = \\
 &= \frac{1}{8 \cdot 64} \cdot x^{6-9} \cdot y^{9-6} = \\
 &= \frac{1}{512} \cdot x^{-3} \cdot y^3 = \\
 &= \frac{1}{512} \cdot \frac{1}{x^3} \cdot y^3 = \\
 &= \frac{y^3}{512x^3}
 \end{aligned}$$

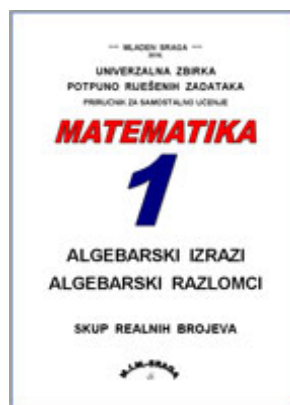
**SVI ZADACI IZ OVOG TESTA UZETI SU  
IZ NAŠE ZBIRKE POTPUNO RIJEŠENIH ZADATAKA:**

**UNIVERZALNA ZBIRKA POTPUNO RIJEŠENIH ZADATAKA**

**MATEMATIKA –1**

Priručnik za **SAMOSTALNO UČENJE**

Za prvi razred gimnazije , tehničke škole i svih ostalih škola



[www.mim-sraga.com](http://www.mim-sraga.com)

5.

$$\begin{aligned} \left(\frac{x^{-2}y^3}{2^{-3}z^{-4}}\right)^3 &= \left(\frac{2^3y^3z^4}{x^2}\right)^3 = \\ &= \left(\frac{8y^3z^4}{x^2}\right)^3 = \\ &= \frac{8^3 \cdot (y^3)^3 \cdot (z^4)^3}{(x^2)^3} = \\ &= \frac{512 \cdot y^{3 \cdot 3} \cdot z^{4 \cdot 3}}{x^{2 \cdot 3}} = \frac{512y^9z^{12}}{x^6} \end{aligned}$$

Najkraće objašnjenje:

Sve što ima minus u eksponentu

"skaće" iz brojnika u nazivnik i obrnuto...

Sada dodatna uputa: Razlomak  $\frac{x^{-2}y^3}{2^{-3}z^{-4}}$ 

Ima u eksponentu "minus" pa se prvo rješavamo tih "minusa"

$$\frac{x^{-2}y^3}{2^{-3}z^{-4}} = \frac{2^3y^3z^4}{x^2} \quad \text{U brojniku je bio: } x^{-2} \text{ i on je "skočio" u nazivnik i sada je: } x^2$$

U nazivniku su bili:  $2^{-3}$  i  $z^{-4}$  i oni su "skočili" u brojnik i sada su:  $2^3$  i  $z^4$ 

$$\begin{aligned} 6. (3^5 \cdot 9^3 \cdot 27^2)^3 &= [3^5 \cdot (3^2)^3 \cdot (3^3)^2]^3 = \\ &= (3^5 \cdot 3^{2 \cdot 3} \cdot 3^{3 \cdot 2})^3 = \\ &= (3^5 \cdot 3^6 \cdot 3^6)^3 = \\ &= (3^{5+6+6})^3 = \\ &= (3^{17})^3 = \\ &= 3^{17 \cdot 3} = 3^{51} \end{aligned}$$

$$\text{primjenimo pravilo: } (a^n)^m = a^{n \cdot m}$$

$$\text{primjenimo pravilo: } a^n \cdot a^m = a^{n+m}$$

$$\text{primjenimo pravilo: } (a^n)^m = a^{n \cdot m}$$

$$\begin{aligned}
7. \quad \frac{25^{x+1} \cdot 5^{x+5}}{125^{3-x}} &= \frac{(5^2)^{x+1} \cdot 5^{x+5}}{(5^3)^{3-x}} = \\
&= \frac{5^{2(x+1)} \cdot 5^{x+5}}{5^{3(3-x)}} = \\
&= \frac{5^{2x+2} \cdot 5^{x+5}}{5^{9-3x}} = \\
&= \frac{5^{2x+2+x+5}}{5^{9-3x}} = \\
&= \frac{5^{3x+7}}{5^{9-3x}} = 5^{3x+7} : 5^{9-3x} = 5^{3x+7-(9-3x)} = 5^{3x+7-9+3x} = 5^{6x-2}
\end{aligned}$$

8.

$$\frac{2a^{-2}b^3}{5^{-1}c^{-4}de^{-5}} = \frac{2 \cdot \frac{1}{a^2} \cdot b^3}{\frac{1}{5} \cdot \frac{1}{c^4} \cdot d \cdot \frac{1}{e^5}} = \frac{2 \cdot 1 \cdot b^3}{\frac{1 \cdot 1 \cdot d \cdot 1}{5 \cdot c^4 \cdot e^5}} = \frac{2 \cdot b^3}{\frac{d}{5 \cdot c^4 \cdot e^5}} = \frac{2 \cdot b^3 \cdot 5 \cdot c^4 \cdot e^5}{a^2 \cdot d} = \frac{10b^3c^4e^5}{a^2d}$$

Ako vam ovo nisu dovoljno detaljne upute pogledajte video sa dodatnom uputom za rješavanje ovog zadatka - ... link na rješenje **8.** zadatka je [ovdje](#) !

9.

$$\begin{aligned}
 2x^3y^4z^5 \cdot \frac{3}{10}x^2y^3z^4 &= 2 \cdot \frac{3}{10} \cdot x^3 \cdot x^2 \cdot y^4 \cdot y^3 \cdot z^5 \cdot z^4 = \\
 &= \cancel{2} \cdot \frac{3}{\cancel{10}} \cdot x^{3+2} \cdot y^{4+3} \cdot z^{5+4} = \\
 &= \frac{3}{5}x^5y^7z^9
 \end{aligned}$$

$$10. \quad \frac{2^7 \cdot 3^5}{6^3} = \frac{2^{2+5} \cdot 3^5}{6^3} = \frac{2^2 \cdot 2^5 \cdot 3^5}{6^3} = \frac{4 \cdot (2 \cdot 3)^5}{6^3} = 4 \cdot \frac{6^5}{6^3} = 4 \cdot 6^5 : 6^3 = 4 \cdot 6^{5-3} = 4 \cdot 6^2 = 4 \cdot 36 = 144$$

$$\begin{aligned}
 11. \quad \frac{3^8 + 3^6}{3^9 - 3^7} &= \frac{3^{2+6} + 3^6}{3^{2+7} - 3^7} = \frac{3^2 \cdot 3^6 + 3^6}{3^2 \cdot 3^7 - 3^7} = \frac{9 \cdot 3^6 + 1 \cdot 3^6}{9 \cdot 3^7 - 1 \cdot 3^7} = \frac{3^6 \cdot (9+1)}{3^7 \cdot (9-1)} = \\
 &= \frac{3^6 \cdot 10}{3^7 \cdot 8} = \frac{3^6 \cdot \cancel{2} \cdot 5}{3^{1+6} \cdot \cancel{2} \cdot 4} = \frac{3^6 \cdot 5}{3^1 \cdot 3^6 \cdot 4} = \frac{\cancel{3^6} \cdot 5}{3 \cdot \cancel{3^6} \cdot 4} = \frac{5}{3 \cdot 4} = \frac{5}{12}
 \end{aligned}$$

Ako vam ovo nisu dovoljno detaljne upute pogledajte video sa dodatnom uputom za rješavanje ovih zadataka ... link na rješenje 10. zadatka je ovdje [ovdje !](#)

link na rješenje 11. zadatka je ovdje [ovdje !](#)

ili otvorite web-stranicu: **RJEŠENJA prvog testa iz POTENCIJA**

na ovom linku: <http://mim-sraga.com/Mat-1--nasa/prvi-ispit-znanja-POTENCIJE-test-br-1.htm>

$$\begin{aligned}
12. \quad \left(\frac{1}{25}a^{-5}b^2c^5\right)^{-4} : (5^{-1}a^{-2}b^{-3}c^{-4})^{-2} &= \left(\frac{1}{25} \cdot \frac{1}{a^5} \cdot \frac{b^2}{1} \cdot \frac{c^5}{1}\right)^{-4} : \left(\frac{1}{5} \cdot \frac{1}{a^2} \cdot \frac{1}{b^3} \cdot \frac{1}{c^4}\right)^{-2} = \\
&= \left(\frac{b^2 \cdot c^5}{25 \cdot a^5}\right)^{-4} : \left(\frac{1}{5 \cdot a^2 \cdot b^3 \cdot c^4}\right)^{-2} = \\
&= \left(\frac{b^2 \cdot c^5}{25 \cdot a^5}\right)^{-1 \cdot 4} : \left(\frac{1}{5 \cdot a^2 \cdot b^3 \cdot c^4}\right)^{-1 \cdot 2} = \\
&= \left(\left(\frac{b^2 \cdot c^5}{25 \cdot a^5}\right)^{-1}\right)^4 : \left(\left(\frac{1}{5 \cdot a^2 \cdot b^3 \cdot c^4}\right)^{-1}\right)^2 = \\
&= \left(\frac{25 \cdot a^5}{b^2 \cdot c^5}\right)^4 : \left(\frac{5 \cdot a^2 \cdot b^3 \cdot c^4}{1}\right)^2 = \\
&= \frac{25^4 \cdot (a^5)^4}{(b^2)^4 \cdot (c^5)^4} : \frac{5^2 \cdot (a^2)^2 \cdot (b^3)^2 \cdot (c^4)^2}{1^2} = \\
&= \frac{(5^2)^4 \cdot a^{5 \cdot 4}}{b^{2 \cdot 4} \cdot c^{5 \cdot 4}} : \frac{5^2 \cdot a^{2 \cdot 2} \cdot b^{3 \cdot 2} \cdot c^{4 \cdot 2}}{1} = \\
&= \frac{5^8 \cdot a^{20}}{b^8 \cdot c^{20}} : \frac{5^2 \cdot a^4 \cdot b^6 \cdot c^8}{1} = \\
&= \frac{5^8 \cdot a^{20}}{b^8 \cdot c^{20}} \cdot \frac{1}{5^2 \cdot a^4 \cdot b^6 \cdot c^8} = \\
&= \frac{5^8 \cdot a^{20} \cdot 1}{b^8 \cdot c^{20} \cdot 5^2 \cdot a^4 \cdot b^6 \cdot c^8} = \\
&= \frac{5^8}{5^2} \cdot \frac{a^{20}}{a^4} \cdot \frac{1}{b^8 \cdot b^6 \cdot c^{20} \cdot c^8} = \\
&= 5^{8-2} \cdot a^{20-4} \cdot \frac{1}{b^{8+6} \cdot c^{20+8}} = \\
&= \frac{5^6}{1} \cdot \frac{a^{16}}{1} \cdot \frac{1}{b^{14} \cdot c^{28}} = \\
&= \frac{5^6 a^{16}}{b^{14} c^{28}} \quad \text{ili} \quad = \frac{15625 a^{16}}{b^{14} c^{28}}
\end{aligned}$$

$$\begin{aligned}
13. & \quad (7^{2x+3} \cdot 7^{3x-2}) : (7^{5x-3} : 7^{2x-2}) \\
& = 7^{2x+3+3x-2} \cdot 7^{5x-3-(2x-2)} = \\
& = 7^{2x+3x+3-2} \cdot 7^{5x-3-2x+2} = \\
& = 7^{5x+1} \cdot 7^{5x-2x-3+2} = \\
& = 7^{5x+1} \cdot 7^{3x-1} = \\
& = 7^{5x+1+3x-1} = \\
& = 7^{5x+3x+1-1} = \\
& = 7^{8x}
\end{aligned}$$

prvo unutar zagrada pomnožimo potencije po pravilima:

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

i opet:  $a^m \cdot a^n = a^{m+n}$

14. zapiši u obliku potencije sa bazom 2

$$\begin{aligned}
& (32^5 \cdot 8^2 \cdot 16^3) : (64 \cdot 32^3 \cdot 16^2) = \\
& = [(2^5)^5 \cdot (2^3)^2 \cdot (2^4)^3] : [2^6 \cdot (2^5)^3 \cdot (2^4)^2] = \\
& = (2^{5 \cdot 5} \cdot 2^{3 \cdot 2} \cdot 2^{4 \cdot 3}) : (2^6 \cdot 2^{5 \cdot 3} \cdot 2^{4 \cdot 2}) = \\
& = (2^{25} \cdot 2^6 \cdot 2^{12}) : (2^6 \cdot 2^{15} \cdot 2^8) = \\
& = 2^{25+6+12} : 2^{6+15+8} = \\
& = 2^{43} : 2^{29} = \\
& = 2^{43-29} = \\
& = 2^{14}
\end{aligned}$$

primjenimo pravilo:

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

$$\rightarrow a^n : a^m = a^{n-m}$$

$$\begin{aligned}
15. \quad (4^{m+4})^5 : (16^{m+5})^2 &= ((2^2)^{m+4})^5 : ((2^4)^{m+5})^2 = \\
&= (2^{2 \cdot (m+4)})^5 : (2^{4 \cdot (m+5)})^2 = \\
&= (2^{2m+8})^5 : (2^{4m+20})^2 = \\
&= 2^{(2m+8) \cdot 5} : 2^{(4m+20) \cdot 2} = \\
&= 2^{10m+40} : 2^{8m+40} = \\
&= 2^{10m+40-(8m+40)} = \\
&= 2^{10m+40-8m-40} = \\
&= 2^{10m-8m+40-40} = \\
&= 2^{2m}
\end{aligned}$$

$$\begin{aligned}
16. \quad \left( \frac{2^{-2} + 2^{-1}}{2^{-3} - 2^{-5}} \right)^{-2} &= \left( \frac{\frac{1}{2^2} + \frac{1}{2}}{\frac{1}{2^3} - \frac{1}{2^5}} \right)^{-2} = \left( \frac{\frac{1}{4} + \frac{1}{2}}{\frac{1}{8} - \frac{1}{32}} \right)^{-2} = \left( \frac{1+2}{\frac{4}{4}-1} \right)^{-2} = \left( \frac{3}{\frac{4}{32}} \right)^{-2} = \left( \frac{3 \cdot 32}{4 \cdot 3} \right)^{-2} = \\
&= \left( \frac{\cancel{3} \cdot \cancel{4} \cdot 8}{\cancel{4} \cdot \cancel{3}} \right)^{-2} = \left( \frac{8}{1} \right)^{-2} = \left( \frac{1}{8} \right)^2 = \frac{1^2}{8^2} = \frac{1}{64}
\end{aligned}$$

**Kompletna rješenja sa postupkom video snimke detaljnih objašnjenja  
većine ovih zadataka nalaze se na:**

<http://www.mim-sraga.com/Mat-1--nasa/prvi-ispit-znanja-POTENCIJE-test-br-1.htm>

**AKO IMATE PROBLEMA SA RJEŠAVANJEM ZADATAKA I PRAĆENJEM NASTAVE  
OVO NAŠA KNJIGA JE NAPISANA BAŠ ZA VAS:**



**UNIVERZALNA ZBIRKA POTPUNO RIJEŠENIH ZADATAKA ZA PRVI RAZRED**  
SKUP REALNIH BROJEVA  
POTENCIJE  
ALGEBARSKI IZRAZI  
ALGEBARSKI RAZLOMCI

**Priručnik za samostalno učenje:**  
za gimnazije , za tehničke škole  
i za sve ostale škole

<http://www.mim-sraga.com/Zbirka-potpuno-rijesenih-zad-Mat-1-ALG-RAZL.htm>



Svi zadaci su kompletno riješeni tehnikom korak po korak uz kompletne upute i objašnjenja ...  
**Kupnjom zbirke dobijete potpunu garanciju** da je to to što ste tražili i imate 24 sata na dan potpunu online podršku !!! Dakle možete postavljati dodatna pitanja putem telefona ili maila ... i odgovore na sva vaša pitanja dobiti ćete putem maila ili telefona ili preko YouTube video snimaka ...  
više o tome imate [ovdje !](#)

## Prvi test iz POTENCIJA

### u sklopu priprema za prvi ispit znanja ...

još jednom samo zadaci:

1. 1)  $\left(\frac{3}{4}\right)^5 : \left(\frac{4}{3}\right)^{-3}$

2.

Pomnoži: -a)  $\frac{1}{2}a^2b^3c^4 \cdot (-4a^3b^2c^5)$       b)  $2x^2y^3z^4 \cdot (-3x^3y^4z^2)$

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

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

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

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

5. Potenciraj i zapiši bez negativnog eksponent

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

6. Zapiši u obliku potencija s bazom 3:

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

7.  $\frac{25^{x+1} \cdot 5^{x+5}}{125^{3-x}}$

8. Zapiši bez negativnog eksponenta ( bez negativne potencije )

$$\frac{2a^{-2}b^3}{5^{-1}c^{-4}de^{-5}}$$

9. Izračunaj:  $2x^3y^4z^5 \cdot \frac{3}{10}x^2y^3z^4$

10. Izračunaj:  $\frac{2^7 \cdot 3^5}{6^3}$

11. Izračunaj:  $\frac{3^8 + 3^6}{3^9 - 3^7}$

12. Pojednostavni i zapiši bez negativnog eksponent.  $\left(\frac{1}{25}a^{-5}b^2c^5\right)^{-4} : (5^{-1}a^{-2}b^{-3}c^{-4})^{-2}$

13.  $(7^{2x+3} \cdot 7^{3x-2}) \cdot (7^{5x-3} : 7^{2x-2})$

14. Izraz  $(32^5 \cdot 8^2 \cdot 16^3) : (64 \cdot 32^3 \cdot 16^2)$  zapiši u obliku potencije sa bazom 2

15. Izraz  $(4^{m+4})^5 : (16^{m+5})^2$  zapiši u obliku potencije sa bazom 2

16. Pojednostavni i zapiši bez negativnog eksponent.  $\left(\frac{2^{-2} + 2^{-1}}{2^{-3} - 2^{-5}}\right)^{-2}$

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>