**** MLADEN SRAGA ****
2011.

UNIVERZALNA ZBIRKA
POTPUNO RIJEŠENIH ZADATAKA

PRIRUČNIK ZA SAMOSTALNO UČENJE

MATEMATIKA

1

SKUP REALNIH BROJEVA

ALGEBARSKI RAZLOMCI

M.I.M.-SRAGA

$\sqrt{\alpha}$

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BESPLATNA - WEB-VARIJANTA

Tisak:
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Ovo je jako skraćena varijanta naše zbirke … samo oglednih 40-ak zadataka ….

Ovo nisu svi zadaci iz ove zbirke ,
Ovo je samo manji dio od oko 12% zadataka iz kompletne zbirke …
I ovdje su postavljeni samo kao ogledni primjerci ….
Ali vam mogu poslužiti kao solidna vježba pred testove ili ispitivanja u školi …

201.

16) $\dfrac{a^2+b^2}{a^4-b^4} = \dfrac{a^2+b^2}{\left(a^2-b^2\right)\left(a^2+b^2\right)} = \dfrac{1\cdot\cancel{\left(a^2+b^2\right)}}{\left(a^2-b^2\right)\cancel{\left(a^2+b^2\right)}} = \dfrac{1}{a^2-b^2}$

$\downarrow$

$a^4-b^4 = \underbrace{\left(a^2\right)^2-\left(b^2\right)^2}_{\text{razlika kvadrata !}} = \left(a^2-b^2\right)\left(a^2+b^2\right)$

$\uparrow$

17) $\dfrac{a^2-b^2}{a^4-b^4} = \dfrac{a^2-b^2}{\left(a^2-b^2\right)\left(a^2+b^2\right)} = \dfrac{1\cdot\cancel{\left(a^2-b^2\right)}}{\cancel{\left(a^2-b^2\right)}\left(a^2+b^2\right)} = \dfrac{1}{a^2+b^2}$

19) $\dfrac{x-y}{\left(y-x\right)^2} = \dfrac{x-y}{\left(x-y\right)^2} = \dfrac{x-y}{\left(x-y\right)\cdot\left(x-y\right)} = \dfrac{1\cdot\cancel{\left(x-y\right)}}{\cancel{\left(x-y\right)}\cdot\left(x-y\right)} = \dfrac{1}{x-y}$

$\downarrow \qquad \uparrow$

$\left(a-b\right)^2 = \left(b-a\right)^2$ sjetimo se ovog pravila (pogledaj u naše formule !!)

20) $\dfrac{x^2y-xy^2}{3x^2y^2-3xy^3} = \dfrac{x\cdot x\cdot y-x\cdot y\cdot y}{3\cdot x\cdot x\cdot y^2-3\cdot x\cdot y^2\cdot y^1} =$

$= \dfrac{\underline{x}\cdot x\cdot\underline{y}-\underline{x}\cdot y\cdot\underline{y}}{\underline{3}\cdot\underline{x}\cdot x\cdot\underline{y^2}-\underline{3}\cdot\underline{x}\cdot\underline{y^2}\cdot y^1} =$

$= \dfrac{x\cdot y\cdot\left(x-y\right)}{3\cdot x\cdot y^2\cdot\left(x-y\right)} = \dfrac{1\cdot\cancel{x}\cdot\cancel{y}\cdot\cancel{\left(x-y\right)}}{3\cdot\cancel{x}\cdot y\cdot\cancel{y}\cdot\cancel{\left(x-y\right)}} =$

$= \dfrac{1}{3y}$

ili kraće :

$\dfrac{x^2y-xy^2}{3x^2y^2-3xy^3} = \dfrac{x\cdot y\cdot\left(x-y\right)}{3\cdot x\cdot y^2\cdot\left(x-y\right)} = \dfrac{1\cdot\cancel{x}\cdot\cancel{y}\cdot\cancel{\left(x-y\right)}}{3\cdot\cancel{x}\cdot y\cdot\cancel{y}\cdot\cancel{\left(x-y\right)}} = \dfrac{1}{3y}$

202.

3) $\dfrac{a+b}{a^3+b^3} = \dfrac{a+b}{(a+b)(a^2-ab+b^2)} = \dfrac{{}^{1}\cancel{(a+b)}}{\cancel{(a+b)}(a^2-ab+b^2)} = \dfrac{1}{a^2-ab+b^2}$

↓

treba prepoznati formulu za zbroj kubova

4) $\dfrac{x^2-xy}{y^2-xy} = \dfrac{x\cdot x - x\cdot y}{y\cdot y - x\cdot y} =$

$= \dfrac{x\cdot(x-y)}{y\cdot(y-x)} = \dfrac{x\cdot(-y+x)}{y\cdot(y-x)} = \dfrac{x\cdot(-1)\cdot(y-x)}{y\cdot(y-x)} = \dfrac{x\cdot(-1)\cdot\cancel{(y-x)}}{y\cdot\cancel{(y-x)}} = x\cdot(-1) = -x$

6) $\dfrac{(x-y)^2}{x^2-y^2} = \dfrac{(x-y)(x-y)}{(x-y)(x+y)} = \dfrac{\cancel{(x-y)}(x-y)}{\cancel{(x-y)}(x+y)} = \dfrac{x-y}{x+y}$

9) $\dfrac{x^2-y^2}{x^3+y^3} = \dfrac{(x-y)(x+y)}{(x+y)(x^2-xy+y^2)} = \dfrac{(x-y)\cancel{(x+y)}}{\cancel{(x+y)}(x^2-xy+y^2)} = \dfrac{x-y}{x^2-xy+y^2}$

↓

zbroj kubova

203.

6.) $\dfrac{x^6-y^6}{x^2-y^2}=\dfrac{\left(x^3\right)^2-\left(y^3\right)^2}{(x-y)(x+y)}=\dfrac{\left(x^3-y^3\right)\left(x^3+y^3\right)}{(x-y)(x+y)}=$

$$=\frac{(x-y)\left(x^2+xy+y^2\right)(x+y)\left(x^2-xy+y^2\right)}{(x-y)(x+y)}=$$

$$=\frac{\cancel{(x-y)}\left(x^2+xy+y^2\right)\cancel{(x+y)}\left(x^2-xy+y^2\right)}{\cancel{(x-y)}\cancel{(x+y)}}=$$

$$=\left(x^2+xy+y^2\right)\left(x^2-xy+y^2\right)=$$

$$=\left(x^2+y^2+xy\right)\left(x^2+y^2-xy\right)=$$

$$=\left(x^2+y^2\right)^2-(xy)^2=$$

$$=\left(x^2\right)^2+2\cdot x^2\cdot y^2+\left(y^2\right)^2-x^2y^2=$$

$$=x^4+2x^2y^2+y^4-x^2y^2=x^4+2x^2y^2-1\cdot x^2y^2+y^4=x^4+x^2y^2+y^4$$

8.) $\dfrac{(x-y)^2-1}{x^2-x-y^2-y}=\dfrac{(x-y)^2-1^2}{x^2-y^2-x-y}=\dfrac{(x-y-1)(x-y+1)}{(x-y)\cdot(x+y)-1\cdot(x+y)}=\dfrac{(x-y-1)(x-y+1)}{(x+y)\cdot(x-y-1)}=$

$$=\frac{\cancel{(x-y-1)}(x-y+1)}{(x+y)\cdot\cancel{(x-y-1)}}=\frac{x-y+1}{x+y}$$

uputa: $(x-y)^2-1=(x-y)^2-1^2=(\text{to je razlika kvadrata ....})=(x-y-1)(x-y+1)$

204.

1) $\dfrac{x^2y}{x^2-x^2y}=\dfrac{x^2\cdot y}{x^2\cdot 1-x^2\cdot y}=\dfrac{x^2\cdot y}{x^2\cdot(1-y)}=\dfrac{\cancel{x^2}\cdot y}{\cancel{x^2}\cdot(1-y)}=\dfrac{y}{1-y}$

5) $\dfrac{4x^2y-4xy^2}{2x^2y-2xy^2}=\dfrac{4\cdot x\cdot x\cdot y-4\cdot x\cdot y\cdot y}{2\cdot x\cdot x\cdot y-2\cdot x\cdot y\cdot y}=\dfrac{4\cdot x\cdot y\cdot(x-y)}{2\cdot x\cdot y\cdot(x-y)}=\dfrac{2\cdot\cancel{2}\cdot\cancel{x}\cdot\cancel{y}\cdot\cancel{(x-y)}}{\cancel{2}\cdot\cancel{x}\cdot\cancel{y}\cdot\cancel{(x-y)}}=\dfrac{2}{1}=2$

ili kraće:

$\dfrac{4x^2y-4xy^2}{2x^2y-2xy^2}=\dfrac{4\cdot x\cdot y\cdot(x-y)}{2\cdot x\cdot y\cdot(x-y)}=\dfrac{2\cdot\cancel{2}\cdot\cancel{x}\cdot\cancel{y}\cdot\cancel{(x-y)}}{\cancel{2}\cdot\cancel{x}\cdot\cancel{y}\cdot\cancel{(x-y)}}=\dfrac{2}{1}=2$

205.

7) $\dfrac{a^4b-a^2b^3}{a^5b-ab^5}=\dfrac{a^2\cdot a^2\cdot b^1-a^2\cdot b^1\cdot b^2}{a^1\cdot a^4\cdot b^1-a^1\cdot b^1\cdot b^4}=$

$=\dfrac{a^2\cdot b^1\cdot(a^2-b^2)}{a^1\cdot b^1\cdot(a^4-b^4)}=\dfrac{a\cdot a\cdot b\cdot(a^2-b^2)}{a\cdot b\cdot(a^2-b^2)(a^2+b^2)}=\dfrac{\cancel{a}\cdot a\cdot\cancel{b}\cdot\cancel{(a^2-b^2)}}{\cancel{a}\cdot\cancel{b}\cdot\cancel{(a^2-b^2)}(a^2+b^2)}=\dfrac{a}{a^2+b^2}$

dodatna uputa :

$\dfrac{a^4b-a^2b^3}{a^5b-ab^5}=\dfrac{a^{2+2}\cdot b^1-a^2\cdot b^{1+1}}{a^{1+4}\cdot b^1-a\cdot b^{1+4}}=$

$=\dfrac{\underline{a^2}\cdot a^2\cdot\underline{b^1}-\underline{a^2}\cdot\underline{b^1}\cdot b^2}{\underline{a^1}\cdot a^4\cdot\underline{b^1}-\underline{a^1}\cdot\underline{b^1}\cdot b^4}=$ u brojniku i nazivniku podvučemo zajedničke faktore

$=\dfrac{a^2\cdot b^1\cdot(a^2-b^2)}{a^1\cdot b^1\cdot(a^4-b^4)}=$ izlučimo z.f. i u brojniku i u nazivniku

$=\dfrac{a\cdot a\cdot b\cdot(a^2-b^2)}{a\cdot b\cdot(a^2-b^2)(a^2+b^2)}=$ u nazivniku treba prepoznati razliku kvadrata

$=\dfrac{\cancel{a}\cdot a\cdot\cancel{b}\cdot\cancel{(a^2-b^2)}}{\cancel{a}\cdot\cancel{b}\cdot\cancel{(a^2-b^2)}(a^2+b^2)}=$ kratimo

$=\dfrac{a}{a^2+b^2}$

206.

10) $\dfrac{(x-3)^2}{(3-x)^3} = \dfrac{(x-3)(x-3)}{(3-x)(3-x)(3-x)} = \dfrac{(x-3)(x-3)}{(-x+3)(-x+3)(3-x)} = \dfrac{(x-3)(x-3)}{-1\cdot(x-3)\cdot(-1)(x-3)\cdot(3-x)} =$

$= \dfrac{(x-3)(x-3)}{(x-3)(x-3)(3-x)} = \dfrac{1\cdot\cancel{(x-3)}\,\cancel{(x-3)}}{\cancel{(x-3)}\,\cancel{(x-3)}\,(3-x)} = \dfrac{1}{3-x}$

11) $\dfrac{x^3+y^3}{(x+y)^3} = ?$

12) $\dfrac{x^3-y^3}{(x-y)^3} = \dfrac{(x-y)(x^2+xy+y^2)}{(x-y)^{1+2}} =$

$= \dfrac{(x-y)(x^2+xy+y^2)}{(x-y)^1\cdot(x-y)^2} = \dfrac{\cancel{(x-y)}\,(x^2+xy+y^2)}{\cancel{(x-y)}\cdot(x-y)^2} = \dfrac{x^2+xy+y^2}{(x-y)^2}$

208.

9) $\dfrac{x^2-y^2}{x^4-y^4}=\dfrac{x^2-y^2}{\left(x^2\right)^2-\left(y^2\right)^2}=\dfrac{x^2-y^2}{\left(x^2-y^2\right)\left(x^2+y^2\right)}=\dfrac{\overset{1}{\cancel{\left(x^2-y^2\right)}}}{\cancel{\left(x^2-y^2\right)}\left(x^2+y^2\right)}=\dfrac{1}{x^2+y^2}$

12) $\dfrac{1-x^2}{x^2-2x+1}=\dfrac{1^2-x^2}{x^2-2x+1^2}=$

$$=\frac{(1-x)(1+x)}{(x-1)^2}=\frac{(1-x)(x+1)}{(1-x)^2}=\frac{(1-x)(x+1)}{(1-x)(1-x)}=\frac{\cancel{(1-x)}(x+1)}{\cancel{(1-x)}(1-x)}=\frac{x+1}{1-x}$$

$$\downarrow \qquad \uparrow$$

pravilo kaže: $(a-b)^2 = (b-a)^2$

15) $\dfrac{x^2-x}{(1-x)^2}=\dfrac{x\cdot x-1\cdot x}{(x-1)^2}=\dfrac{x\cdot(x-1)}{(x-1)(x-1)}=\dfrac{x\cdot\cancel{(x-1)}}{(x-1)\cancel{(x-1)}}=\dfrac{x}{x-1}$

$\downarrow \qquad \uparrow$

pravilo: $(a-b)^2=(b-a)^2$

209.

8) $\dfrac{x^3y+2x^2y+xy}{x^3y-xy}=\dfrac{x^1\cdot x^2\cdot y+2\cdot x^1\cdot x^1\cdot y+x^1\cdot y\cdot 1}{x^1\cdot x^2\cdot y-x^1\cdot y\cdot 1}=$

$$=\frac{x^1\cdot y\cdot\left(x^2+2\cdot x+1\right)}{x^1\cdot y\cdot\left(x^2-1\right)}=\frac{\cancel{x}\cdot\cancel{y}\cdot(x+1)^2}{\cancel{x}\cdot\cancel{y}\cdot\left(x^2-1^2\right)}=\frac{(x+1)(x+1)}{(x-1)(x+1)}=\frac{(x+1)\cancel{(x+1)}}{(x-1)\cancel{(x+1)}}=\frac{x+1}{x-1}$$

210.

1) $\dfrac{(x-3)^2+12x}{x^2-9}=\dfrac{x^2-2\cdot x\cdot 3+3^2+12x}{x^2-3^2}=$ $\rightarrow$ pogledati u 57. zadatak kako se to radi ...

$$=\frac{x^2-6x+12x+3^2}{(x-3)(x+3)}=$$

$$=\frac{x^2+6x+3^2}{(x-3)(x+3)}=\frac{(x+3)^2}{(x-3)(x+3)}=\frac{(x+3)\cancel{(x+3)}}{(x-3)\cancel{(x+3)}}=\frac{x+3}{x-3}$$

4) $\dfrac{(x+2)^2-8x}{x^2-5x-6}=\dfrac{x^2+4x+4-8x}{x^2-3x-2x-6}=\dfrac{x^2+4x-8x+4}{x\cdot x-3\cdot x-2\cdot x-2\cdot 3}=$

$$=\frac{x^2-4x+4}{x\cdot(x-3)-2\cdot(x-3)}=\frac{(x-2)^2}{(x-3)(x-2)}=\frac{(x-2)\cancel{(x-2)}}{(x-3)\cancel{(x-2)}}=\frac{x-2}{x-3}$$

uputa uz ovaj zadatak :

$x^2-5x-6\rightarrow$ je kvadratni trinom ...

tehnika kako se taj izraz rješava na faktore objašnjena je u 66. zadatku ove zbirke !

211.

9) $$\frac{x^2+y^2-z^2+2xy}{x^2+xz+xy-y-x-z}=\frac{x^2+2xy+y^2-z^2}{x\cdot(x+z+y)-(y+x+z)}=\frac{(x+y)^2-z^2}{x\cdot(x+y+z)-1\cdot(y+x+z)}=$$

$$=\frac{(x+y-z)(x+y+z)}{(x+y+z)\cdot(x-1)}=\frac{(x+y-z)\cancel{(x+y+z)}}{\cancel{(x+y+z)}\cdot(x-1)}=\frac{x+y-z}{x-1}$$

212.

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

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

$$=\frac{\left[(x^2)^2-(y^2)^2\right](x^4+y^4)}{(x^2+y^2)(x-y)}$$

$$=\frac{(x^2-y^2)(x^2+y^2)(x^4+y^4)}{(x^2+y^2)(x-y)}=\frac{(x^2-y^2)\cancel{(x^2+y^2)}(x^4+y^4)}{\cancel{(x^2+y^2)}(x-y)}=$$

$$=\frac{(x^2-y^2)(x^4+y^4)}{(x-y)}=\frac{\cancel{(x-y)}(x+y)(x^4+y^4)}{\cancel{(x-y)}}=$$

$$=(x+y)(x^4+y^4)$$

213.

U ovom zadatku se ponovo susrečemo sa KVADRATNIM TRINOMOM
u zadatku br. 66. smo dali detaljnu uputu kako se kvadratni trinom rastavlja na faktore ....

1) $\dfrac{x^2-4}{x^2-x-2}=\dfrac{x^2-2^2}{x^2-2x+1x-2}=$

$$=\frac{(x-2)(x+2)}{x\cdot(x-2)+1\cdot(x-2)}=\frac{(x-2)(x+2)}{(x-2)(x+1)}=\frac{\cancel{(x-2)}(x+2)}{\cancel{(x-2)}(x+1)}=\frac{x+2}{x+1}$$

$\Updownarrow$

uputa kako rastaviti
kvadratni trinom iz brojnika:

$$x^2-x-2=\left|\begin{matrix}a=1\\b=-1\\c=-2\end{matrix}\right|\Rightarrow\left.\begin{matrix}m+n=b\\m\cdot n=a\cdot c\end{matrix}\right\}\Rightarrow\left.\begin{matrix}m+n=-1\\m\cdot n=1\cdot(-2)\end{matrix}\right\}\Rightarrow\left.\begin{matrix}m+n=-1\\m\cdot n=-2\end{matrix}\right\}\Rightarrow m=-2,\ n=1$$

$m=-2\quad,\quad n=1$

$$x^2-x-2=x^2-2x+1x-2=$$
$$=x(x-2)-1(x-2)=$$
$$=x(\underline{x-2})-1(\underline{x-2})=$$
$$=(x-2)(x-1)$$

2) $\dfrac{4x^2-4x+1}{2x^2-5x+2}=\dfrac{2^2\cdot x^2-2\cdot 2x\cdot 1+1^2}{2x^2-4x-1x+2}=\dfrac{(2x)^2-2\cdot 2x\cdot 1+1^2}{2\cdot x\cdot x-2\cdot 2\cdot x-1\cdot x+2}=\dfrac{(2x-1)^2}{2x\cdot(x-2)-1\cdot(x-2)}=$

$$=\frac{(2x-1)(2x-1)}{(x-2)(2x-1)}=\frac{(2x-1)\cancel{(2x-1)}}{(x-2)\cancel{(2x-1)}}=\frac{2x-1}{x-2}$$

$\Updownarrow$

uputa kako rastaviti
kvadratni trinom iz brojnika:

$$2x^2-5x+2=\left|\begin{matrix}a=2\\b=-5\\c=2\end{matrix}\right|\Rightarrow\left.\begin{matrix}m+n=b\\m\cdot n=a\cdot c\end{matrix}\right\}\Rightarrow\left.\begin{matrix}m+n=-5\\m\cdot n=2\cdot 2\end{matrix}\right\}\Rightarrow\left.\begin{matrix}m+n=-5\\m\cdot n=4\end{matrix}\right\}\Rightarrow m=-4,\ n=-1$$

$m=-4\quad,\quad n=-1$

$$2x^2-5x+2=2x^2-4x-1x+2=$$
$$=2x(x-2)-1(x-2)=$$
$$=2x(\underline{x-2})-1(\underline{x-2})=$$
$$=(x-2)(2x-1)$$

214.

4) $\dfrac{x^3-x^2y+xy^2-x^3}{x^3+x^2y+xy^2+y^3}=\dfrac{x^2\cdot x^1-x^2\cdot y+x^1\cdot y^2-x^1\cdot x^2}{x^2\cdot x^1+x^2\cdot y+x\cdot y^2+y^2\cdot y^1}=$

$$=\frac{x^2\cdot(x-y)+x\cdot(y^2-x^2)}{x^2\cdot(x+y)+y^2\cdot(x+y)}=$$

$$=\frac{x\cdot x\cdot(x-y)+x\cdot(y-x)(y+x)}{(x+y)(x^2+y^2)}=\frac{x\cdot x\cdot(x-y)-x\cdot(x-y)(y+x)}{(x+y)(x^2+y^2)}=$$

$$=\frac{x\cdot(x-y)[x-(y+x)]}{(x+y)(x^2+y^2)}=$$

$$=\frac{x\cdot(x-y)(x-y-x)}{(x+y)(x^2+y^2)}=\frac{x\cdot(x-y)(-y)}{(x+y)(x^2+y^2)}=$$

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

$$=\frac{xy(y-x)}{(x+y)(x^2+y^2)}$$

215.

1) $\dfrac{a^x+a^{x+1}}{a^x-a^{x+1}}=\dfrac{a^x\cdot 1+a^x\cdot a^1}{a^x\cdot 1-a^x\cdot a^1}=\dfrac{a^x\cdot(1+a)}{a^x\cdot(1-a)}=\dfrac{\cancel{a^x}\cdot(1+a)}{\cancel{a^x}\cdot(1-a)}=\dfrac{1+a}{1-a}$

2) $\dfrac{a^x+a^{x+1}}{a^x-a^{x+1}}=\dfrac{a^x\cdot 1+a^x\cdot a^1}{a^x\cdot 1-a^x\cdot a^1}=\dfrac{a^x\cdot(1+a)}{a^x\cdot(1-a)}=\dfrac{1+a}{1-a}$

3) $\dfrac{a^{x+2}-a^x}{a^{x+1}+a^x}=\dfrac{a^x\cdot a^2-1\cdot a^x}{a^x\cdot a^1+1\cdot a^x}=$

$=\dfrac{a^x\cdot(a^2-1)}{a^x\cdot(a+1)}=\dfrac{a^x\cdot(a-1)(a+1)}{a^x\cdot(a+1)}=\dfrac{\cancel{a^x}\cdot(a-1)\cancel{(a+1)}}{\cancel{a^x}\cdot\cancel{(a+1)}}=\dfrac{a-1}{1}=a-1$

4) $\dfrac{a^{x+4}-a^x}{a^{x+3}-a^{x+2}+a^{x+1}-a^x}=\dfrac{a^x\cdot a^4-a^x\cdot 1}{a^x\cdot a^3-a^x\cdot a^2+a^x\cdot a^1-a^x\cdot 1}=\dfrac{a^x\cdot(a^4-1)}{a^x\cdot(a^3-a^2+a-1)}=$

$=\dfrac{\cancel{a^x}\cdot(a^4-1)}{\cancel{a^x}\cdot(a^3-a^2+a-1)}=$

$=\dfrac{a^4-1}{a^3-a^2+a-1}=\dfrac{(a^2)^2-1^2}{a^2\cdot a^1-a^2\cdot 1+1\cdot(a-1)}=$

$=\dfrac{(a^2-1)(a^2+1)}{a^2\cdot(a-1)+1\cdot(a-1)}=$

$=\dfrac{(a-1)(a+1)(a^2+1)}{(a-1)(a^2+1)}=\dfrac{\cancel{(a-1)}(a+1)\cancel{(a^2+1)}}{\cancel{(a-1)}\cancel{(a^2+1)}}=$

$=\dfrac{a+1}{1}=a+1$

221.

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

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

5

7) $\frac{2}{x-3}-\frac{4}{x+3}+\frac{3x}{x^2-9}=\frac{2}{x-3}-\frac{4}{x+3}+\frac{3x}{x^2-9}=\frac{2}{x-3}-\frac{4}{x+3}+\frac{3x}{(x-3)(x+3)}=$

$=\frac{2(x+3)-4(x-3)+3x}{(x-3)(x+3)}=\frac{2x+6-4x+12+3x}{(x-3)(x+3)}=$

$=\frac{2x-4x+3x+6+12}{x^2-3^2}=\frac{x+18}{x^2-9}$

222.

2) $\dfrac{5x^2y^4z^4}{6a^3b^4c^5}\cdot\dfrac{18a^5b^4c}{25xy^2z^4}=\dfrac{5\cdot x\cdot x\cdot y^2\cdot y^2\cdot z^4}{6\cdot a^3\cdot b^4\cdot c^1\cdot c^4}\cdot\dfrac{6\cdot 3\cdot a^3\cdot a^2\cdot b^4\cdot c}{5\cdot 5\cdot x\cdot y^2\cdot z^4}=$

$=\dfrac{\cancel{5}\cdot\cancel{x}\cdot x\cdot\cancel{y^2}\cdot y^2\cdot\cancel{z^4}}{\cancel{6}\cdot\cancel{a^3}\cdot\cancel{b^4}\cdot\cancel{c^1}\cdot c^4}\cdot\dfrac{\cancel{6}\cdot 3\cdot\cancel{a^3}\cdot a^2\cdot\cancel{b^4}\cdot\cancel{c}}{\cancel{5}\cdot 5\cdot\cancel{x}\cdot\cancel{y^2}\cdot\cancel{z^4}}=$

$=\dfrac{xy^2\cdot 3\cdot a^2}{c^4\cdot 5}=\dfrac{3xy^2a^2}{5c^4}$

5) $\dfrac{x^3+y^3}{x-y}\cdot\dfrac{x^3-y^3}{x^2-xy+y^2}=\dfrac{(x+y)(x^2-xy+y^2)}{(x-y)}\cdot\dfrac{(x-y)(x^2+xy+y^2)}{x^2-xy+y^2}=$

$=\dfrac{(x+y)\cancel{(x^2-xy+y^2)}}{\cancel{(x-y)}}\cdot\dfrac{\cancel{(x-y)}(x^2+xy+y^2)}{\cancel{(x^2-xy+y^2)}}=(x+y)(x^2+xy+y^2)$

225.

4) $\dfrac{x^2+4x+4}{x^2-y^2}:\dfrac{x^2-4}{x^2-2xy+y^2}=\dfrac{x^2+2\cdot 2\cdot x+2^2}{(x-y)(x+y)}\cdot\dfrac{x^2-2xy+y^2}{x^2-2^2}=\dfrac{(x+2)^2}{(x-y)(x+y)}\cdot\dfrac{(x-y)^2}{(x-2)(x+2)}=$

$=\dfrac{(x+2)\cancel{(x+2)}}{\cancel{(x-y)}(x+y)}\cdot\dfrac{\cancel{(x-y)}(x-y)}{(x-2)\cancel{(x+2)}}=\dfrac{(x+2)(x-y)}{(x+y)(x-2)}$

5) $\dfrac{(x-1)^2-y^2}{(x+1)^2-y^2}:\dfrac{x^2-x-xy}{x^2+x-xy}=\dfrac{(x-1-y)(x-1+y)}{(x+1-y)(x+1+y)}\cdot\dfrac{x^2+x-xy}{x^2-x-xy}=$

$=\dfrac{(x-1-y)(x-1+y)}{(x+1-y)(x+1+y)}\cdot\dfrac{x\cdot(x+1-y)}{x\cdot(x-1-y)}=$

$=\dfrac{\cancel{(x-1-y)}(x-1+y)}{\cancel{(x+1-y)}(x+1+y)}\cdot\dfrac{\cancel{(x+1-y)}}{\cancel{(x-1-y)}}=$

$=\dfrac{x-1+y}{x+1+y}=\dfrac{x+y-1}{x+y+1}$

8) $\left(\dfrac{x-y}{x+y}+\dfrac{x+y}{x+y}\right):\dfrac{x^3+xy^2}{x^3-xy^2}=\dfrac{(x-y)(x-y)+(x+y)(x+y)}{(x+y)\cdot(x-y)}\cdot\dfrac{x^3-xy^2}{x^3+xy^2}=$

$=\dfrac{(x-y)^2+(x+y)^2}{x^2-y^2}\cdot\dfrac{x\left(x^2-y^2\right)}{x\left(x^2+y^2\right)}=$

$=\dfrac{x^2-2xy+y^2+x^2+2xy+y^2}{x^2-y^2}\cdot\dfrac{\left(x^2-y^2\right)}{\left(x^2+y^2\right)}=$

$=\dfrac{2x^2+2y^2}{x^2-y^2}\cdot\dfrac{x^2-y^2}{x^2+y^2}=\dfrac{2\cancel{\left(x^2+y^2\right)}}{\cancel{\left(x^2-y^2\right)}}\cdot\dfrac{\cancel{\left(x^2-y^2\right)}}{\cancel{\left(x^2+y^2\right)}}=2$

Cijena kompletne zbirke ALGEBARSKI RAZLOMCI za PRVI razred srednje škole je 120 kn sa popustom = 60kn
Sve dodatne informacije i narudžbe na:
01-4578-431
ili
098-237-534
ili na mail: mim-sraga@zg.htnet.hr

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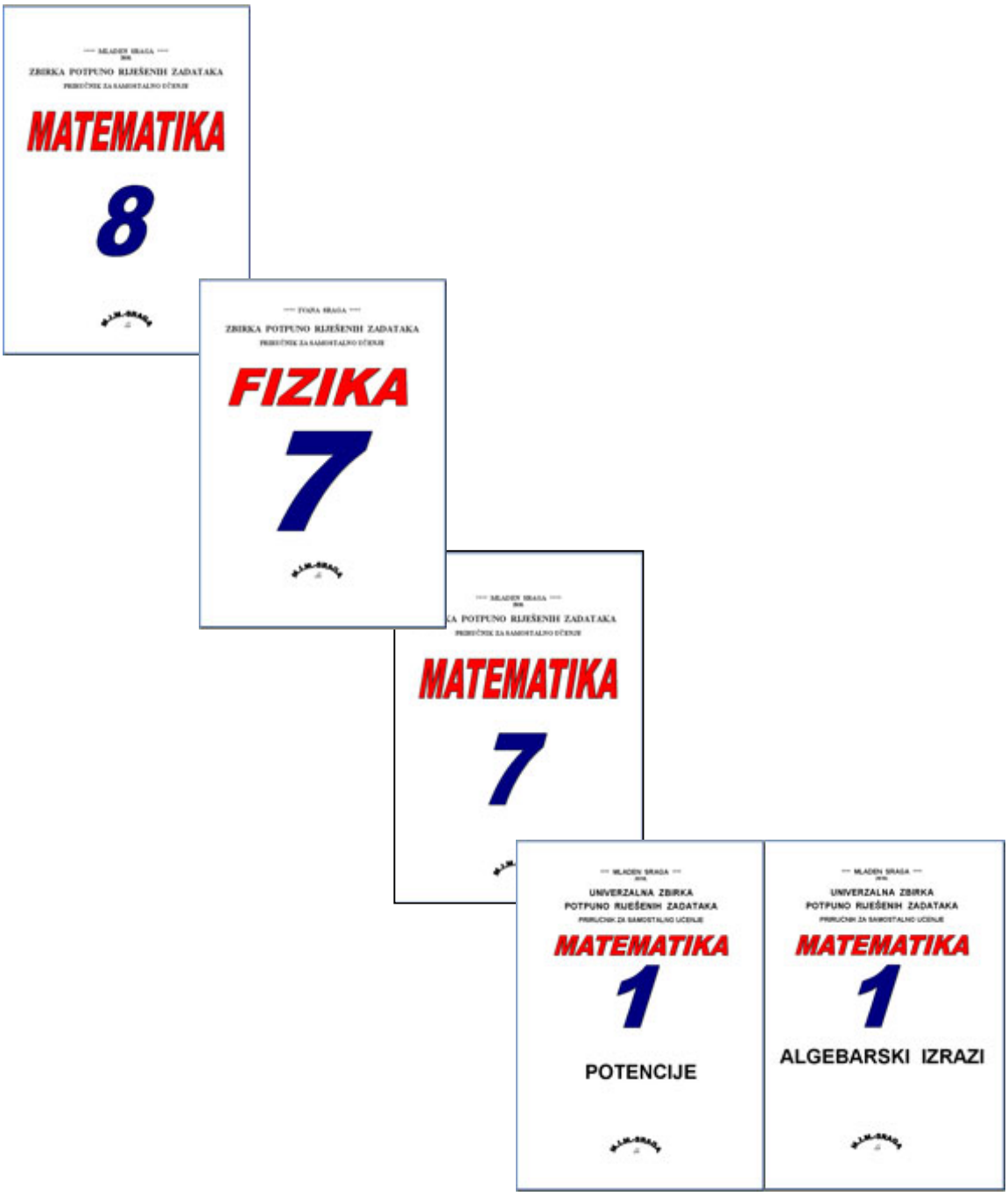

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