MILAN MROCZKOWSKI
YESIT.CZ

NAPIŠ PODMÍNKY PRO: $\frac{5-x^3}{\sqrt{2x+6}}$

1) JAKÝMKOLIV ČÍSLEM V ČITATELI MOHU DĚLIT JMENOVATELE, PROTO PRO ČITATELE NEPÍŠI PODMÍNKY

2) POD ODMOCNINOU NESMÍ BÝT ZÁPORNÉ ČÍSLO, VE JMENOVATELI NESMÍ BÝT NULA, PROTOŽE NULOU NELZE DĚLIT

a) ZJISTÍM JAKÁ ČÍSLA MOHOU BÝT POD ODMOCNINOU, VÍM ŽE ODMOCNINA MŮŽE OBSAHOVAT ČÍSLA NULA A VÝŠE ANIŽ BYCH DOSTAL ERROR NA KALKULAČCE.

$$2x+6 \geq 0 \quad /-6$$
$$2x \geq 0-6$$
$$2x \geq -6 \quad /:2$$
$$x \geq -3$$

PRAVDĚPODOBNĚ MOHOU BÝT ČÍSLA $\langle -3, \infty)$

b) VE JMENOVATELI NESMÍ BÝT NULA

$$2x+6 \neq 0 \quad /-6$$
$$2x \neq -6 \quad /:2$$
$$x \neq -3$$

$(-3, \infty)$

NYNÍ VE JMENOVATELI MOHOU BÝT ČÍSLA $x \in (-3, \infty)$, ALE NEMOHOU BÝT $x \notin (-\infty, -3\rangle$

① ZKRAŤ ZLOMEK A ZJISTI PODMÍNKY

$$\frac{a^2+ab-a-b}{-2a+a^2-2b+ab} =$$

$$= \frac{a^2-a+ab-b}{a^2-2a+ab-2b} = \frac{a(a-1)+b(a-1)}{a(a-2)+b(a-2)} = \frac{(a+b)(a-1)}{(a+b)(a-2)} =$$

$$= \frac{\cancel{(a+b)}}{\cancel{(a+b)}} \cdot \frac{(a-1)}{(a-2)} = \frac{(a-1)}{(a-2)} = \underline{\underline{\frac{a-1}{a-2}}}$$

Podmínka: $-2a+a^2-2b+ab \neq 0$

podmínka: $a \neq 2$

podmínka: $a \neq -b$

(Dělím v příkladu, tím eliminuji b, proto přidávám podmínku, aby se zlomek nedělil nulou)

②

$$\frac{a^2-2ab+b^2}{a^2-b^2} = \frac{(a-b)^{\cancel{2}}}{\cancel{(a-b)}(a+b)} = \underline{\underline{\frac{a-b}{a+b}}}$$

Podmínka: $a^2-b^2 \neq 0$

$a^2 \neq b^2$

$a \neq \sqrt{b^2}$

$a \neq |b|$ absolutní hodnota, b může být kladné i záporné

$a \neq \pm b$

$a+b \neq 0 \quad /-b$

$a \neq -b$

(tato podmínka je již v předchozí podmínce)

③

$$\frac{3c-2b}{8bc}+\frac{a+4b}{12ab}+\frac{5a-c}{6ac}-\frac{2c-3b}{3bc}-\frac{3}{4a}=$$

podmínky: $a\neq 0$, $b\neq 0$, $c\neq 0$

Zjistím společný jmenovatel

$8bc = 2\cdot 2\cdot 2\cdot b\cdot c$
$12ab = 2\cdot 2$
$6ac = 2$
$3bc =$
$4a = 2\cdot 2$

Doplním chybějící

$8bc$: a 3
$12ab$: a 3
$6ac$: c a 3
$3bc$: b c 3
$4a$: a

$\Rightarrow 2\cdot 2\cdot 2\cdot 3\cdot b\cdot c\cdot a = 24abc$

$$=\frac{(3c-2b)\cdot 3a+(a+4b)\cdot 2c+(5a-c)\cdot 4b-(2c-3b)\cdot 8a-3\cdot 6bc}{24abc}$$

④

$$\frac{a}{a-b}-1=\frac{a}{a-b}-\frac{a-b}{a-b}=$$

($\frac{a-b}{a-b}\to 1$)

$a\neq b$

$$=\frac{a-(a-b)}{a-b}=$$

$$=\frac{a-a+b}{a-b}=$$

$$=\frac{b}{a-b}$$

(5) URČETE PODMÍNKY PRO X.

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

$x \neq 2a$
$x \neq -2a$
$x \neq 0$

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

$A^2 - B^2$

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

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

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

$$= \frac{(-x)(x+2a) + (-x)(x-2a) + 8a^2}{(-x)(x-2a)(x+2a)} =$$

$$= \frac{-x^2 - 2ax + (-x^2 + 2ax) + 8a^2}{(-x)(x-2a)(x+2a)} =$$

$$= \frac{-x^2 - 2ax - x^2 + 2ax + 8a^2}{(-x)(x-2a)(x+2a)} = \frac{-2x^2 + 8a^2}{(-x)(x^2 - 4a^2)} =$$

$$= \frac{-2(x^2 - 4a^2)}{-x(x^2 - 4a^2)} = \frac{-2}{-x} \cdot \frac{(x^2 - 4a^2)}{(x^2 - 4a^2)} = \frac{-1}{-1} \cdot \frac{2}{x} \cdot 1 = \underline{\underline{\frac{2}{x}}}$$

(6)

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

$3xy \neq 0$

$x \neq 0$

$y \neq 0$

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

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

$$= \frac{1}{1} \cdot \frac{3xy}{4-2x^2} =$$

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

$4-2x^2 \neq 0$

$-2x^2 \neq -4 \quad /\cdot(-1)$

$2x^2 \neq 4 \quad :2$

$x^2 \neq 2$

$x \neq \pm\sqrt{2}$

(7)

$$a^{2k+1} \cdot a^{2-7k} = a^{2k+1+2-7k} = a^{-5k+3}$$

(8)

$$(U^{2n} \cdot V^n)^2 \cdot (U \cdot V^n)^3 =$$

$$= (U^{2n})^2 \cdot (V^n)^2 \cdot (U)^3 \cdot (V^n)^3 =$$

$$= U^{4n} \cdot V^{2n} \cdot U^3 \cdot V^{3n} =$$

$$= \underline{\underline{(U^{4n+3}) \cdot V^{2n+3n}}}$$

Pozn.: $(a \cdot b)^c = a^c \cdot b^c$

$(a^c)^b = a^{cb}$

(9)

$$\left(\frac{a}{b}\right)^{-c} = \frac{1}{\left(\frac{a}{b}\right)^c} = \frac{1}{1} \cdot \frac{b^c}{a^c} = \underline{\underline{\frac{b^c}{a^c}}}$$

$$\left(\frac{a}{b}\right)^c = \underline{\underline{\frac{a^c}{b^c}}}$$

$$\left(\frac{a^2 \cdot b}{c^3}\right)^{-k} = \frac{1}{\left(\frac{a^2 \cdot b}{c^3}\right)^k} = \frac{1}{1} \cdot \frac{(c^3)^k}{(a^2 \cdot b)^k} =$$

$$= \underline{\underline{\frac{c^{3k}}{a^{2k} \cdot b^k}}}$$

ZKRAŤTE ZLOMEK

① $\dfrac{a^4-b^4}{a^2+b^2}$

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

správný výsledek je i $(a-b)(a+b)$, ale není kolik zkrácen.

SEČTĚTE

① $\dfrac{2a-c}{4c} - \dfrac{3a^2-2bc}{6ac} - \dfrac{3a}{b} + \dfrac{5a-b}{2b} - \dfrac{4b+a}{8b}$

② $\dfrac{2x}{x+y} + \dfrac{3y}{x-y} - \dfrac{2x^2+3y^2}{x^2-y^2}$

① $\dfrac{2a-c}{4c} - \dfrac{3a^2-2bc}{6ac} - \dfrac{3a}{b} + \dfrac{5a-b}{2b} - \dfrac{4b+a}{8b} =$

$(2\ 2\ c\ \ 2\ \ c\ a\ 3\ \ b\ \ 2\ \ 2\ 2\ 2\ c\ a\ 3\ b)$

$24abc$

$= \dfrac{6ab(2a-c) - 4b(3a^2-2bc) - 24ac\cdot 3a + 12ac(5a-b) - 3ac(4b+a)}{24abc}$

$= \dfrac{12a^2b - 6abc - 12a^2b + 8b^2c - 72a^2c + 60a^2c - 12abc - 12abc - 3a^2c}{24abc}$

$= \dfrac{-30abc + 8b^2c - 15a^2c}{24abc} = \underline{\underline{\dfrac{8b^2c - 15a^2c - 30abc}{24abc}}}$

(2)

$$\frac{2x}{x+y} + \frac{3y}{x-y} - \frac{2x^2+3y^2}{x^2-y^2} =$$

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

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

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

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

Určím podmínky: $x+y \neq 0$

$x \neq -y$

$x-y \neq 0$

$x \neq y$

ZJEDNODUŠTE SLOŽENÉ ZLOMKY:

① $$\frac{x}{x-\frac{1}{x-\frac{x}{1-x}}} = ?$$

② $$\frac{\frac{x}{x-1}-\frac{x+1}{x}}{\frac{x}{x+1}-\frac{x-1}{x}} = ?$$

①

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

$$= \frac{x}{x-\frac{1}{\frac{x-x^2-x}{1-x}}} = \frac{x}{x-\frac{1}{\frac{-x^2}{1-x}}} =$$

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

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

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

$$= \frac{x}{\frac{x \cdot x^2 + 1 - x}{x^2}} = \frac{x}{\frac{x^3+1-x}{x^2}} = \frac{x}{1} \cdot \frac{x^2}{x^3+1-x} = \frac{x^3}{x^3+1-x}$$

$x \neq 0$

(2)

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

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

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

$$= \frac{x+1}{x-1} \cdot \frac{x}{x} = \frac{x+1}{x-1} \cdot 1 = \frac{x+1}{x-1}$$

$x+1 \neq 0$
$x \neq -1$

$x \neq 0$

$x - 1 \neq 0$
$x \neq 1$

VYPOČÍTEJTE

a) $$\frac{(0,6)^0 - (0,1)^{-1}}{\left(\frac{3}{2^3}\right)^{-1} \cdot \left(\frac{3}{2}\right)^3 + \left(\frac{-1}{3}\right)^{-1}}$$

b) $$\frac{5^{-5} \cdot 0,1^{-4} + \left(\frac{1}{7}\right)^0 - 5^{-1}}{(-2)^{-2} \cdot \left(-\frac{1}{2}\right)^{-4} + \left(-\frac{1}{2}\right)^{-1}}$$

a)

$$\frac{(0,6)^0 - (0,1)^{-1}}{\left(\frac{3}{2^3}\right)^{-1} \cdot \left(\frac{3}{2}\right)^3 + \left(\frac{-1}{3}\right)^{-1}} = \frac{1 - \left(\frac{1}{10}\right)^{-1}}{\frac{1}{\left(\frac{3}{2^3}\right)} \cdot \frac{3^3}{2^3} + \frac{1}{\left(\frac{-1}{3}\right)}} =$$

$$= \frac{1 - \frac{1}{\frac{1}{10}}}{\frac{1}{\frac{3}{8}} \cdot \frac{27}{8} + \frac{1}{1} \cdot \frac{3}{-1}} = \frac{1 - \frac{1}{1} \cdot \frac{10}{1}}{\frac{1}{1} \cdot \frac{8}{3} \cdot \frac{27}{8} + \frac{3}{-1}} =$$

$$= \frac{\frac{1}{1} - \frac{10}{1}}{\frac{\cancel{8}^{1}}{\cancel{3}_{1}} \cdot \frac{\cancel{27}^{9}}{\cancel{8}_{1}} + \frac{1}{-1} \cdot \frac{3}{1}} = \frac{1 - 10}{\frac{1}{1} \cdot \frac{9}{1} + (-1) \cdot \frac{3}{1}} =$$

$$= \frac{-9}{9 - 3} = \frac{-9}{6} = \frac{-3}{2} = \underline{\underline{-\frac{3}{2}}}$$

b)

$$\frac{5^{-5}\cdot 0{,}1^{-4}+\left(\frac{1}{7}\right)^{0}-5^{-1}}{(-2)^{-2}\cdot\left(-\frac{1}{2}\right)^{-4}+\left(-\frac{1}{2}\right)^{-1}}=\frac{\frac{1}{5^5}\cdot\frac{1}{\left(\frac{1}{10}\right)^4}+\frac{1}{1}-\frac{1}{5^1}}{\frac{1}{-2^2}\cdot\frac{1}{\left(-\frac{1}{2}\right)^4}+\left(\frac{1}{-\frac{1}{2}}\right)}=$$

$$=\frac{\frac{1}{5^5}\cdot\frac{1}{\frac{1}{10^4}}+1-\frac{1}{5}}{\frac{1}{4}\cdot\frac{1}{-\frac{1^4}{2^4}}+\frac{1}{1}\cdot\left(-\frac{2}{1}\right)}=\frac{\frac{1}{5^5}\cdot\frac{1}{1}\cdot\frac{10^4}{1}+1-\frac{1}{5}}{\frac{1}{4}\cdot\frac{1}{1}\cdot\left(-\frac{2^4}{1^4}\right)+\left(-\frac{2}{1}\right)}=$$

$$=\frac{\frac{1}{5^5}\cdot 10^4+1-\frac{1}{5}}{\frac{1}{4}\cdot\left(-\frac{2^4}{1}\right)-\frac{2}{1}}=\frac{\frac{10^4}{5^5}+\frac{1}{1}-\frac{1}{5}}{-\frac{2^4}{4}-\frac{2}{1}}=$$

$$=\frac{\frac{10^4}{5^5}+\frac{5-1}{5}}{\frac{16}{4}-2}=\frac{\frac{10^4}{5^5}+\frac{4}{5}}{4-2}=\frac{\frac{10^4+4\cdot 5^4}{5^5}}{2}=$$

$$=\frac{(2\cdot 5)^4+4\cdot 5^4}{5^5}\cdot\frac{1}{2}=\frac{(2\cdot 5)^4+4\cdot 5^4}{5^5\cdot 2}=$$

$$=\frac{2^4\cdot 5^4+4\cdot 5^4}{5^5\cdot 2}=\frac{5^4\cdot(2^4+4)}{5^4\cdot(5^1)\cdot 2}=\frac{2^4+4}{5\cdot 2}=$$

$$=\frac{16+4}{10}=\underline{\underline{2}}$$

UPRAVTE:

a) $\left(\frac{3a}{1-3a}+\frac{2a}{3a+1}\right):\frac{6a^2+10a}{1-6a+9a^2}$

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

c) $\left(\frac{a-b}{a+b}+\frac{a+b}{a-b}\right)\left(\frac{a^2+b^2}{2ab}+1\right)\frac{ab}{a^2+b^2}$

d) $\frac{\frac{a^2+b^2}{b}+2a}{\frac{1}{b}+\frac{1}{a}}+\frac{2b-\frac{a^2+b^2}{a}}{\frac{1}{b}-\frac{1}{a}}$

a)

$$\left(\frac{3a}{1-3a}+\frac{2a}{3a+1}\right):\frac{6a^2+10a}{1-6a+9a^2}=$$

$$=\left(\frac{3a(3a+1)+2a(1-3a)}{(1-3a)(3a+1)}\right)\cdot\frac{1-6a+9a^2}{6a^2+10a}=$$

$$=\frac{9a^2+3a+2a-6a^2}{3a+1-9a^2-3a}\cdot\frac{1-6a+9a^2}{6a^2+10a}=$$

$$=\frac{3a^2+5a}{1-9a^2}\cdot\frac{1-6a+9a^2}{6a^2+10a}=$$

$$=\frac{3a^2+5a}{1-9a^2}\cdot\frac{1-6a+9a^2}{2(3a^2+5a)}=$$

podmínka $a\neq 0$

$$=\frac{3a^2+5a}{1}\cdot\frac{1}{1-9a^2}\cdot\frac{1}{3a^2+5a}\cdot\frac{1-6a+9a^2}{2}=$$

$$=\frac{3a^2+5a}{3a^2+5a}\cdot\frac{1-6a+9a^2}{2(1-9a^2)}=1\cdot\frac{1-6a+9a^2}{2(1-9a^2)}=$$

$$=\frac{(1-3a)^2}{2(1-3a)(1+3a)}=\frac{1-3a}{2(1+3a)}$$

Podmínky:

$1-3a\neq 0$

$-3a\neq -1 \quad /\cdot(-1)$

$3a\neq 1 \quad /:3$

$a\neq\frac{1}{3}$

$3a+1\neq 0 \quad /-1$

$3a\neq -1$

$a\neq -\frac{1}{3}$

b)

$$\left(\frac{a^{-3}b}{c^{-1}d^2}\right)^{-3} \cdot \left(\frac{c^{-2}d^3}{a^{-1}b^5}\right)^{-3} =$$

$$= \left(\frac{\frac{1}{a^3}\cdot b}{\frac{1}{c}\cdot d^2}\right)^{-3} \cdot \left(\frac{\frac{1}{c^2}\cdot d^3}{\frac{1}{a}\cdot b^5}\right)^{-3} =$$

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

Podmínky:

$a \neq 0$

$b \neq 0$

$c \neq 0$

$d \neq 0$

$$= \frac{1}{\left(\frac{\frac{b}{a^3}}{\frac{d^2}{c}}\right)^3} \cdot \frac{1}{\left(\frac{\frac{d^3}{c^2}}{\frac{b^5}{a}}\right)^3} =$$

$$= \frac{1}{\left(\frac{b}{a^3}\cdot\frac{c}{d^2}\right)^3} \cdot \frac{1}{\left(\frac{d^3}{c^2}\cdot\frac{a}{b^5}\right)^3} =$$

$$= \frac{1}{\left(\frac{bc}{a^3d^2}\right)^3} \cdot \frac{1}{\left(\frac{d^3a}{c^2b^5}\right)^3} = \frac{1}{\frac{b^3c^3}{a^9d^6}} \cdot \frac{1}{\frac{d^9a^3}{c^6b^{15}}} =$$

$$= \frac{1}{1}\cdot\frac{a^9d^6}{b^3c^3}\cdot\frac{1}{1}\cdot\frac{c^6b^{15}}{d^9a^3} = \frac{a^{\cancel{9}^{6}}d^{\cancel{6}^{0}}}{b^3c^3}\cdot\frac{c^6b^{15}}{d^{\cancel{9}^{3}}a^{\cancel{3}}} =$$

$$= \frac{a^6}{b^{\cancel{3}}c^{\cancel{3}}}\cdot\frac{c^{\cancel{6}^{3}}b^{\cancel{15}^{12}}}{d^3} = \underline{\underline{\frac{a^6c^3b^{12}}{d^3}}}$$

c)

$$\left(\frac{a-b}{a+b}+\frac{a+b}{a-b}\right)\cdot\left(\frac{a^2+b^2}{2ab}+1\right)\cdot\frac{ab}{a^2+b^2}=$$

$$=\left(\frac{(a-b)(a-b)+(a+b)(a+b)}{(a+b)(a-b)}\right)\cdot\left(\frac{a^2+b^2}{2ab}+\frac{1}{1}\right)\cdot\frac{ab}{a^2+b^2}=$$

$$=\left(\frac{(a^2-ab-ab+b^2)+(a^2+ab+ab+b^2)}{(a+b)(a-b)}\right)\cdot\left(\frac{a^2+b^2+2ab}{2ab}\right)\cdot\frac{ab}{a^2+b^2}=$$

$$=\frac{a^2-ab-ab+b^2+a^2+ab+ab+b^2}{(a+b)(a-b)}\cdot\frac{a^2+b^2+2ab}{2\cancel{ab}_{1}}\cdot\frac{\overset{1}{\cancel{ab}}}{a^2+b^2}=$$

$$=\frac{a^2-2ab+b^2+a^2+2ab+b^2}{(a+b)(a-b)}\cdot\frac{a^2+b^2+2ab}{2(a^2+b^2)}=$$

$$=\frac{2a^2+2b^2}{(a+b)(a-b)}\cdot\frac{a^2+b^2+2ab}{2(a^2+b^2)}=$$

$a+b\neq 0$, $a\neq -b$

$a-b\neq 0$, $a\neq b$

$a\neq 0$

$b\neq 0$

$$=\frac{\overset{1}{\cancel{2(a^2+b^2)}}}{(a+b)(a-b)}\cdot\frac{a^2+b^2+2ab}{\cancel{2(a^2+b^2)}_{1}}=$$

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

d) $$\frac{\frac{a^2+b^2}{b}+2a}{\frac{1}{b}+\frac{1}{a}}+\frac{2b-\frac{a^2+b^2}{a}}{\frac{1}{b}-\frac{1}{a}}=$$

$$=\frac{\frac{a^2+b^2+2ab}{b}}{\frac{a+b}{ba}}+\frac{\frac{2ab-(a^2+b^2)}{a}}{\frac{a-b}{ab}}=$$

$$=\frac{\frac{(a+b)^2}{b}}{\frac{a+b}{ba}}+\frac{\frac{2ab-a^2-b^2}{a}}{\frac{a-b}{ab}}=$$

$$=\frac{(a+b)^{\cancel{2}}}{b}\cdot\frac{ba}{\cancel{a+b}}+\frac{\frac{(-1)(a^2-2ab+b^2)}{a}}{\frac{a-b}{ab}}=$$

$$=\frac{(a+b)}{b}\cdot\frac{ba}{1}+\frac{\frac{(-1)(a-b)^2}{a}}{\frac{a-b}{ab}}=$$

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

$$=\frac{a+b}{1}\cdot\frac{1}{1}\cdot\frac{a}{1}+\left(-\frac{1}{1}\right)\frac{(a-b)}{a}\cdot\frac{ab}{1}=$$

$$=a(a+b)+\frac{(-a+b)\cancel{ab}}{\cancel{a}}=a(a+b)+(b-a)b=$$

$$=a^2+ab+b^2-ba=\underline{\underline{a^2+b^2}}$$

OPAKOVÁNÍ

$$(a^5b - ab^5) : (a^3b - ab^3) = a^2 + b^2$$

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

$$a^3b^3 - ab^5$$

$$-(a^3b^3 - ab^5)$$

$$0$$