Test z aritmetiky 1
Cermat 2016 PId (14b)

a) $1-\sqrt{\frac{25}{64}}=$ $1-\frac{5}{8}=\frac{8}{8}-\frac{5}{8}=\frac{3}{8}$

b) $5+3\cdot(-2)-(5+2:2)=$ $5-6-6=-7$

c) $3\cdot\frac{2}{15}+\frac{1}{3}\cdot\frac{2}{15}=$ $\frac{3\cdot6}{3\cdot15}+\frac{2}{45}=\frac{18}{45}+\frac{2}{45}=\frac{20}{45}=\frac{4}{9}$

d) $\frac{2\cdot\frac{2}{3}-\frac{5}{6}}{\frac{2}{3}}=$ $\frac{\frac{4}{6}-\frac{5}{6}}{\frac{2}{3}}=\frac{-\frac{1}{6}}{\frac{2}{3}}=-\frac{1}{6}:\frac{2}{3}=-\frac{1}{6}\cdot\frac{3}{2}=-\frac{1}{4}$

Zjednoduš

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

VZOREC

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

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

f) $y(3y-1)-3(y^2-y)=$ $3y^2-y-3y^2+3y=2y$

Řeš rovnici:

g) $\frac{1-x}{2}=4-x+\frac{5x}{3}$ $/\cdot6$

$3-3x=24-6x+10x$

$3-3x=24+4x$

$-3x-4x=24-3$

$-7x=21$ $/:7$

$-x=3$ $/\cdot(-1)$

$x=-3$

Test z aritmetiky 2
Cermat 2016 PZD (13b)

a) $0{,}5 \cdot 0{,}06 - 0{,}09 : 0{,}1 =$

b) $(9-\sqrt{9})^2 - (\sqrt{9})^2 =$

c) $\dfrac{2 - \dfrac{3}{5} \cdot \dfrac{5}{2}}{2} =$

d) $\dfrac{3}{4} : \dfrac{15}{2} - \left(\dfrac{3}{5}\right)^2 =$

Zjednoduš

e) $(2x-3)^2 + (12x - 2x^2) =$

f) $(2+y)(y-2) - 2(y^2-1) =$

Řeš rovnici:

g) $\dfrac{6+5x}{6} - \dfrac{1}{3} = \dfrac{10}{9}x + 1$

Test z aritmetiky 3
Cermat 2017 PID (14b)

a) $40-20\cdot(-6):4-5\cdot(4+12:4)=$ $40+120:4-35=40+30-35=35$

b) $\frac{0{,}3^2}{0{,}1}:0{,}01=$ $\frac{0{,}09}{0{,}1}:0{,}01=0{,}9:0{,}01=90:1=90$

$0{,}09:0{,}1=0{,}9:1=0{,}9$

c) $\frac{7}{12}-\frac{5}{8}\cdot 1{,}6=$ $\frac{7}{12}-\frac{5}{8}\cdot\frac{16}{10}=\frac{7}{12}-\frac{2}{2}=\frac{7}{12}-\frac{12}{12}=-\frac{5}{12}$

d) $\frac{2\frac{2}{3}-1\frac{3}{5}}{2\frac{2}{3}}=$ $\frac{\frac{8}{3}-\frac{8}{5}}{\frac{8}{3}}=\frac{\frac{40-24}{15}}{\frac{8}{3}}=\frac{\frac{16}{15}}{\frac{8}{3}}=\frac{16}{15}\cdot\frac{3}{8}=\frac{2}{5}$

Zjednoduš

e) $(3a+1)^2-3a(2+5a)=$ $9a^2+6a+1-6a-15a^2=-6a^2+1$

vzorec

$(3a+1)(3a+1)=9a^2+3a+3a+1$

f) $(1+2b)\cdot\frac{b}{2}-\frac{2-b}{2}=$ $\frac{(1+2b)\cdot b}{2}-\frac{2-b}{2}=\frac{b+2b^2-(2-b)}{2}=\frac{b+2b^2-2+b}{2}=\frac{2b^2+2b-2}{2}=\frac{2\cdot(b^2+b-1)}{2}=b^2+b-1$

Řeš rovnici:

g) $x=2{,}5\cdot x$

$0=2{,}5x-x$

$0=1{,}5x \quad /:(1{,}5)$

$0=x$

Řeš rovnici:

h) $(1-x)\cdot\frac{5}{6}=\frac{10}{9}x-\frac{1}{3} \quad /\cdot 18$

$(1-x)\cdot 15=20x-6$

$\frac{5}{6}-\frac{5}{6}x=\frac{10}{9}x-\frac{1}{3} \quad /\cdot 18$

$15-15x=20x-6$

$-35x=-21 \quad /\cdot(-1)$

$35x=+21 \quad /:7$

$5x=3 \quad /:5$

$x=\frac{3}{5}$

Test z aritmetiky 4
Cermat 2017 PAD (14b)

a) $\sqrt{4 \cdot 0{,}25} =$ $\sqrt{1} = 1$
$= 2 \cdot 0{,}5 = 1$

b) $1 : 0{,}2^2 =$ $1 : 0{,}04 = 100 : 4 = 25$ (·100)

c) $0{,}2 : \frac{27}{25} - \frac{2}{3} =$ $\frac{2}{10} \cdot \frac{25}{27} - \frac{2}{3} = \frac{5}{27} - \frac{18}{27} = -\frac{13}{27}$

d) $\frac{\frac{1}{5} - \frac{3}{10} + \frac{1}{4} \cdot 2}{4} =$ $\frac{\frac{2}{10} - \frac{3}{10} + \frac{5}{10}}{4} = \frac{\frac{4}{10}}{4} = \frac{4}{10} : 4 = \frac{1}{10} \cdot \frac{1}{4} = \frac{1}{10}$

Zjednoduš

e) $(a+a) \cdot (1-a) - a \cdot a =$ $2a \cdot (1-a) - a^2 = 2a - 2a^2 - a^2 = 2a - 3a^2$

f) $\frac{n-1}{2} - \frac{2n-3}{4} =$ $\frac{2n-2}{2 \cdot 2} - \frac{2n-3}{4} = \frac{2n-2-(2n-3)}{4} = \frac{2n-2-2n+3}{4} = \frac{1}{4}$

Řeš rovnici:

g) $-\frac{2}{3} \cdot \frac{x}{2} = \frac{5}{12}$

$-\frac{x}{3} = \frac{5}{12} \quad / \cdot 3$ $\quad \frac{5}{12} \cdot 3$

$-x = \frac{5}{4}$

$x = -\frac{5}{4}$

Řeš rovnici:

h) $\frac{x-2}{2} - x = 2 - \frac{2x}{3} \quad / \cdot 6$

$3x - 6 - 6x = 12 - 4x$

$-6 - 3x = 12 - 4x$

$-3x + 4x = 12 + 6$

$x = 18$

Test z aritmetiky 5
Cermat 2017 PBD (14b)

a) $0{,}5 : 0{,}5^2 =$ $0{,}5 : 0{,}25 = 50 : 25 = 2$

b) $6 \cdot \frac{-15-6\cdot(-2)}{2} =$ $6 \cdot \frac{-15+12}{2} = 3 \cdot \frac{-3}{1} = -9$

$\hookrightarrow 3 \cdot [-15-6\cdot(-2)] = 3 \cdot [-15+12] = 3 \cdot [-3]$

c) $2 - \frac{1}{3} - \frac{1}{6} \cdot \frac{16}{3} =$ $\frac{18}{9} - \frac{3}{9} - \frac{8}{9} = \frac{7}{9}$

$\hookrightarrow \frac{8}{9}$

d) $\dfrac{\frac{7}{10} - \frac{2}{5} : \frac{1}{10}}{20 \cdot \frac{3}{10}} =$ $\dfrac{\frac{7}{10} - \frac{2}{5}\cdot\frac{10}{1}}{6} = \frac{\frac{7}{10} - 4}{6} = \frac{\frac{7}{10} - \frac{40}{10}}{6} = \frac{-\frac{33}{10}}{6} = -\frac{33}{10} : 6 = -\frac{33}{10}\cdot\frac{1}{6} = -\frac{11}{20}$

Mínus bude až do konce

$\frac{16}{1} \cdot \frac{3}{10}$

Zjednoduš

e) $(x-4)^2 + (8-2x)\cdot 2x =$ $x^2 - 8x + 16 + 16x - 4x^2 = -3x^2 + 8x + 16$

$\hookrightarrow$ VZOREC

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

f) $(a+2a)\cdot(a-2a) - (a-2a) =$ $3a \cdot (-a) - (-a) = -3a^2 + a$

Řeš rovnici:

g) $4x + 1 = 4 \cdot (4x + 0{,}25)$

$4x + 1 = 16x + 1$

$4x - 16x = 1 - 1$

$-12x = 0 \quad / : (-12)$

$x = 0$

Řeš rovnici:

h) $\frac{x-5}{2} + x = \frac{2x}{3} - \frac{5}{6} \quad / \cdot 6$

$6 \cdot \frac{2x}{3} = 4x$

$3x - 15 + 6x = 4x - 5$

$-15 + 9x = 4x - 5$

$9x - 4x = -5 + 15$

$5x = 10 \quad / : 5$

$x = 2$

Test z aritmetiky 6
Cermat 2017 PCD (12b)

a) $2-2\cdot\frac{9}{10}:3=$

b) $\frac{3^2}{5}-\frac{3}{5^2}+\left(-\frac{3}{5}\right)^2=$

Zjednoduš

c) $[(a-4a)^2-3a(3a+2)]^2=$

d) $(2b+1)(2b-1)-b(-b+b)+1=$

Řeš rovnici:

e) $\frac{5x-2}{4}=1{,}25x-\frac{1}{2}$

Řeš rovnici:

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

Test z aritmetiky 7
Cermat 2017 PDD (14b)

Doplň čísla aby platila rovnost

a) $(y+6)\cdot(2y+3)=2y^2+15y+18$

Vypočítej:

b) $\left(\frac{11}{5}\cdot\frac{7}{20}-\frac{5\cdot7}{5\cdot20}\right):\frac{7}{5}=$

c) $\frac{3^2-3\cdot3}{9}+\frac{3}{1+\frac{1}{3}}\cdot\frac{4\cdot\frac{1}{3}}{6}=$

Zjednoduš

d) $(2a+\sqrt{25-16})\cdot(2a-\sqrt{4+4+1})=$

Vypočítej:

e) $(50+\sqrt{2000})\cdot(50-\sqrt{2000})=$

Řeš rovnici:

f) $\frac{6x-5}{3}=2x-\frac{10}{3}$

Řeš rovnici:

g) $2\cdot\frac{x-1}{9}-\frac{2x+3}{6}=\frac{1}{2}$

Test z aritmetiky 8
Cermat 2018 PAD (14b)

a) $\sqrt{1^2-0{,}6^2}=$ $\sqrt{1-0{,}36}=\sqrt{0{,}64}=0{,}8$

↳ NEMOHU ODMOCŇOVAT KAŽDÝ ZVLÁŠŤ !

b) $100-\frac{1}{0{,}01\cdot 0{,}1}=$ $100-\frac{1}{0{,}001}=100-1000=-900$

↳ $1:0{,}001=1000:1=1000$

c) $\frac{\frac{4}{1+2}-1}{1+2}=$ $\frac{\frac{4}{3}-\frac{3}{3}}{3}=\frac{\frac{1}{3}}{3}=\frac{1}{3}:3=\frac{1}{3}\cdot\frac{1}{3}=\frac{1}{9}$

d) $\left(2-\frac{7}{8}\right)\cdot\frac{8}{9}:\left(\frac{5}{8}+\frac{5}{6}\right)=$ $\frac{9}{8}\cdot\frac{8}{9}:\frac{35}{24}=1:\frac{35}{24}=1\cdot\frac{24}{35}=\frac{24}{35}$

↳ $\frac{16}{8}-\frac{7}{8}=\frac{9}{8}$ $\frac{5}{8}+\frac{5}{6}=\frac{15+20}{24}=\frac{35}{24}$

Zjednoduš VZOREC

e) $(3+a)^2-(3\cdot a)^2-3^2=$ $9+6a+a^2-9a^2-9=6a-8a^2$

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

f) $2n\cdot(3-n)+2\cdot(3n\cdot n)-n\cdot(3\cdot n)=$ $6n-2n^2+6n^2-3n^2=6n+n^2$

Řeš rovnici:

g) $2\cdot\frac{5x}{6}-\frac{1}{3}=x-\frac{1}{2}$

$\frac{5x}{3}-\frac{1}{3}=x-\frac{1}{2}\quad/\cdot 6$

$10x-2=6x-3$

$4x=-1\quad/:4$

$x=-\frac{1}{4}$

Řeš rovnici:

h) $y-\frac{1-3y}{2}=\frac{7}{4}+\frac{5y}{3}\quad/\cdot 12$

NEZLOMEK:

$12y-6\cdot(1-3y)=3\cdot 7+4\cdot 5y$

$12y-6+18y=21+20y$

$-6+30y=21+20y$

$30y-20y=21+6$

$10y=27\quad/:10$

$y=2{,}7\qquad y=\frac{27}{10}$

Test z aritmetiky 9
Cermat 2018 PBD (14b)

a) $100+1:\sqrt{6400+60^2}=$

b) $0{,}005\cdot 10^2-1{,}2:0{,}02=$

c) $\left(0{,}5+\frac{2}{5}\right):\left(2-\frac{7}{8}\right)=$

d) $\dfrac{3\cdot\frac{2}{9}-\frac{3}{5}:\frac{6}{15}}{2}=$

Zjednoduš

e) $(2+3a)^2-(2-3a)^2=$

f) $\frac{1}{2}\cdot n\cdot(2-3n)+3\cdot(n+2n)-n\cdot(3-n)=$

Řeš rovnici:

g) $x\cdot(x+2)+0{,}6=x\cdot x+\frac{1}{5}$

Řeš rovnici:

h) $\frac{2y-3}{4}-2\cdot\frac{y}{5}=\frac{2-y}{2}-1$

Test z aritmetiky 10
Cermat 2018 PCD (14b)

a) $25{,}6 : 0{,}2 - 10^2 \cdot 0{,}029 =$

b) $\dfrac{\sqrt{1{,}2^2}}{0{,}01} - \dfrac{(\sqrt{0{,}01})^2}{10} \cdot 3600 =$

c) $\dfrac{\frac{1}{4}+\frac{2}{3}}{\left(3-\frac{9}{4}\right)\cdot\frac{8}{3}} =$

d) $3 : \dfrac{2\cdot 6}{2+6} - \dfrac{12}{3}\cdot\dfrac{5}{8} =$

Zjednoduš

e) $a - a^2 + 2 - 2\cdot(a+1)\cdot(1-a) =$

f) $\left(n-\frac{5}{2}\right):2+\left(\frac{1}{2}-n\right)^2 =$

Řeš rovnici:

g) $0{,}4+\dfrac{4x}{5}-1=0{,}2x-\dfrac{3}{2}$

Řeš rovnici:

h) $\dfrac{3y-1}{3}-\dfrac{5y-2}{6}=\dfrac{3}{4}y+2$

Test z aritmetiky 11
Cermat 2018 PDD (14b)

a) $1{,}5^2-0{,}3^2=$

b) $210:(-0{,}7)+\sqrt{\dfrac{8^2+8}{6^2-4}}=$

c) $0{,}2-0{,}2\cdot\dfrac{5}{12}-\left(-\dfrac{7}{30}\right)=$

d) $\dfrac{\frac{5}{6}:\frac{15}{8}+\frac{4}{9}}{2\cdot\left(1-\frac{1}{4}\right):\frac{1}{24}}=$

Zjednoduš

e) $2a\left(2-\dfrac{a}{2}\right)-\left(\dfrac{2a}{3}+a^2\right)\cdot 3=$

f) $2\cdot(1-n)^2+(n+2)^2-3\cdot(2+n\cdot n)=$

Řeš rovnici:

g) $\dfrac{x-2}{0{,}2}+0{,}6=x+\dfrac{1}{5}$

Řeš rovnici:

h) $\dfrac{y-2-2y}{3}+3\cdot\dfrac{2y}{5}=2y-\dfrac{3y-1}{3}$

Test z aritmetiky 12
Cermat 2019 PAD (12b)

a) $(6-4)\cdot\frac{11}{8}+\frac{9}{14}\cdot\frac{7}{6}=$ $2\cdot\frac{11}{8}+\frac{3}{4}=\frac{11}{4}+\frac{3}{4}=\frac{14}{4}=\frac{7}{2}$

b) $\dfrac{\frac{2\cdot3}{6}-\frac{4}{2\cdot3}}{\frac{2+3}{6}}=$ $\dfrac{\frac{6}{6}-\frac{4}{6}}{\frac{5}{6}}=\dfrac{\frac{2}{6}}{\frac{5}{6}}=\frac{2}{6}:\frac{5}{6}=\frac{2}{6}\cdot\frac{6}{5}=\frac{2}{5}$

Zjednoduš

c) $(3a-2)\cdot(-2a)=$ $-6a^2+4a$

VZOREC

d) $(3x-4)^2=$ $9x^2-24x+16$

↳ $(3x-4)(3x-4)=9x^2-12x-12x+16$

e) $(2+n)\cdot(3n-3)+(3n-n)\cdot2-n\cdot(3-5)=$ $6n-6+3n^2-3n+4n+2n=9n-6+3n^2$

Řeš rovnici:

f) $0{,}6x-\frac{1}{2}=1{,}4x+1{,}5$ /·10

$6x-5=14x+15$
$6x-14x=15+5$
$-8x=20$ /:4
$-2x=5$ /:(-2)
$x=-\frac{5}{2}$ 2.M → $x=-2{,}5$

Řeš rovnici:

g) $\frac{3-2y}{3}=\frac{1-2y}{4}+\frac{y+3}{6}$ /·12

$12-8y=3-6y+2y+6$
$12-8y=9-4y$
$-8y+4y=9-12$
$-4y=-3$ /·(-1)
$4y=3$ /:4
$y=\frac{3}{4}$ 2.M → $y=0{,}75$

Test z aritmetiky 13
Cermat 2019 PBD (14b)

a) $\sqrt{10^2 \cdot 0{,}0025} =$ $\sqrt{100 \cdot 0{,}0025} = \sqrt{0{,}25} = 0{,}5$; $10 \cdot 0{,}05 = 0{,}5$

b) $5 : 0{,}2 - (-0{,}3 + 0{,}5) =$ $25 - (0{,}2) = 25 - 0{,}2 = 24{,}8$

$50 : 2$

$25{,}0 - 0{,}2 = 24{,}8$

c) $\dfrac{1 - \frac{1}{3}}{-6^2} =$ $\dfrac{\frac{3}{3} - \frac{1}{3}}{-36} = \dfrac{\frac{2}{3}}{-36} = -\dfrac{\frac{2}{3}}{36} = -\dfrac{2}{3} : 36 = -\dfrac{2}{3} \cdot \dfrac{1}{36} = -\dfrac{1}{54}$

d) $12 \cdot \left(\frac{2}{3} - \frac{1}{2}\right) - \frac{5}{2} + \frac{2}{3} =$ $12 \cdot \left(\dfrac{4-3}{6}\right) - \frac{5}{2} + \frac{2}{3} = 2 \cdot \frac{1}{6} - \frac{5}{2} + \frac{2}{3} = 2 - \frac{5}{2} + \frac{2}{3} = \frac{12}{6} - \frac{15}{6} + \frac{4}{6} = \frac{1}{6}$

Zjednoduš

e) $(2a+3b)^2 =$ $4a^2 + 12ab + 9b^2$ VZOREC

$= (2a+3b)(2a+3b) =$

f) $3e \cdot (2-f) - 2f \cdot (e-3f) =$ $6e - 3ef - 2ef + 6f^2 = 6e - 5ef + 6f^2$

g) $(1+3n)(1+3n) + (1+3n)\cdot(1-3n) - 2 =$ $1 + 6n + 9n^2 + 1 - 9n^2 - 2 = 6n$

VZ: VZ:

$1 + 3n + 3n + 9n^2 + 1 - 3n + 3n - 9n^2 - 2$

Řeš rovnici:

h) $2 \cdot (3 - 0{,}75x) + x = 7 - \frac{x}{2}$

$/\cdot 2$

$4 \cdot (3 - 0{,}75x) + 2x = 14 - x$

$6 - 1{,}5x + x = 7 - \frac{x}{2}$ $/\cdot 2$

$12 - 3x + 2x = 14 - x$

$12 - x = 14 - x$

$-x + x = 14 - 12$

$0 \neq 2$

ROVNICE NEMÁ ŘEŠENÍ

Řeš rovnici:

i) $\frac{5}{6} \cdot (y-2) - \frac{2}{3} \cdot y = \frac{y}{2} - \frac{5}{4}$ $/\cdot 12$

$12 \cdot \frac{5}{6} \cdot (y-2)$

$\frac{5}{6}y - \frac{5}{3} - \frac{2}{3}y = \frac{y}{2} - \frac{5}{4}$ $/\cdot 12$

$10y - 20 - 8y = 6y - 15$

$10 \cdot (y-2) - 8y = 6y - 15$

$2y - 20 = 6y - 15$

$2y - 6y = -15 + 20$

$-4y = 5$

$y = -\frac{5}{4}$ $y = -1{,}25$

Test z aritmetiky 14
Cermat 2019 PCD (12b)

a) $\frac{6}{5}-\frac{6}{5}:\frac{9}{10}+0{,}3=$ $\frac{6}{5}-\frac{\cancel{6}^{2}}{5}\cdot\frac{10}{\cancel{9}_{3}}+\frac{3}{10}=\frac{6\cdot 6}{6\cdot 5}-\frac{20\cdot 2}{15\cdot 2}+\frac{3\cdot 3}{10\cdot 3}=\frac{36-40+9}{30}=\frac{5}{30}=\frac{1}{6}$

b) $\dfrac{2+\frac{14}{3}}{2\cdot\frac{14}{3}}=$ $\dfrac{\frac{6}{3}+\frac{14}{3}}{\frac{28}{3}}=\dfrac{\frac{20}{3}}{\frac{28}{3}}=\frac{20}{3}:\frac{28}{3}=\frac{\cancel{20}^{5}}{\cancel{3}}\cdot\frac{\cancel{3}}{\cancel{28}_{7}}=\frac{5}{7}$

Zjednoduš

c) $(5n-2)\cdot(-4n)=$ $-20n^2+8n$

VZOREC

d) $\left(2x-\frac{1}{2}\right)^2=$ $4x^2-2x+\frac{1}{4}$

$\left(2x-\frac{1}{2}\right)\left(2x-\frac{1}{2}\right)$ ← ROZNÁSOBIT

e) $a\cdot 2a-2\cdot(3a-1)\cdot a-a\cdot(\overset{3}{7-4})=$ $2a^2-6a^2+2a-3a=-4a^2-a$

$-2a\cdot(3a-1)$

Řeš rovnici:

f) $0{,}2x+\frac{1}{2}=2\cdot(x+0{,}25)$

$0{,}2x+\frac{1}{2}=2x+0{,}5$ /·10

$2x+5=20x+5$

$2x-20x=5-5$

$-18x=0$ /:(-18)

$x=0$

Řeš rovnici:

g) $\frac{9-3y}{6}-\frac{3-2y}{2}=\frac{3-y}{3}$ /·6 (!)

MEZIVÝPOČET: $9-3y-3\cdot(3-2y)=6-2y$

$9-3y-9+6y=6-2y$

$3y=6-2y$

$3y+2y=6$

$5y=6$ /:5

$y=\frac{6}{5}$

Test z aritmetiky 15
Cermat 2019 PDD (14b)

a) $\sqrt{14{,}4 : 0{,}001} =$

b) $0{,}5 - (-0{,}3 + 0{,}5) \cdot 2{,}1 =$

c) $\dfrac{\frac{5}{2} - \frac{2}{5}}{(-7)^2} =$

d) $\dfrac{5}{3} \cdot \dfrac{9}{50} \cdot \left(1 - \dfrac{4}{9}\right) - \dfrac{2}{3} =$

Zjednoduš

e) $\left(\dfrac{x}{3} + \dfrac{3}{2}\right)^2 =$

f) $5a \cdot (0{,}4b - 2a + 3) =$

g) $(4+n) \cdot (4-n) + (3n-2) \cdot (-3) =$

Řeš rovnici:

h) $6x - 2 = 4 \cdot \left(x - \dfrac{1}{2}\right) + 2x$

Řeš rovnici:

i) $3 - y = \dfrac{3}{4} \cdot (2y - 1) - 2$

Test z aritmetiky 16
Cermat 2020 PAD (13b)

a) $(-0{,}4)^2+0{,}3^2=$ $0{,}16 + 0{,}09 = 0{,}25$

b) $\left(\frac{1}{4}+\frac{5}{6}\right)\cdot\left(\frac{5}{13}-\frac{1}{2}\right)=$ $\left(\frac{3+10}{12}\right)\cdot\left(\frac{10-13}{26}\right) = \frac{13}{12}\cdot\frac{(-3)}{26} = -\frac{1}{8}$

c) $\dfrac{\frac{6}{5}}{\frac{7}{6}\cdot 4-4\cdot\frac{5}{12}}=$ $\dfrac{\frac{6}{5}}{\frac{14}{3}-\frac{5}{3}} = \dfrac{\frac{6}{5}}{\frac{9}{3}} = \frac{6}{5}:\frac{3}{1} = \frac{6}{5}\cdot\frac{1}{3} = \frac{2}{5}$

Rozlož na součin

d) $p^2-16=$ vzorec $(A+B)(A-B)$ $(p-4)(p+4)$

Zjednoduš vzorec

e) $(2x+5)^2=$ $4x^2+20x+25$
↳ $(2x+5)(2x+5)$ 5

f) $(2n+6)\cdot(4n-5)+(3-5)\cdot 2n-5n\cdot(n-2n)=$ $8n^2 - 10n + 24n - 30 - 4n + 5n^2 = 13n^2 + 10n - 30$

Řeš rovnici:

g) $3{,}2-0{,}5x-1=0{,}6-1{,}3x$ /·10

$32 - 5x - 10 = 6 - 13x$
$-5x + 22 = 6 - 13x$
$-5x + 13x = 6 - 22$
$8x = -16$ /:8
$x = -2$

Řeš rovnici:

h) $\frac{5y+3}{8}-\frac{y}{2}=\frac{4-y}{5}+\frac{2y-1}{10}$ /·40

$5\cdot(5y+3) - 20y = 8\cdot(4-y) + 4\cdot(2y-1)$
$25y + 15 - 20y = 32 - 8y + 8y - 4$
$5y + 15 = 28$
$5y = 28 - 15$
$5y = 13$ /:5
$y = \frac{13}{5}$

Test z aritmetiky 17
Cermat 2020 PCD (12b)

a) $\frac{1}{2}+\frac{8}{5}\cdot\left(\frac{3}{8}-\frac{1}{6}\right)=$ $\frac{1}{2}+\frac{8}{5}\cdot\left(\frac{9-4}{24}\right)=\frac{1}{2}+\frac{\cancel{8}^{1}}{5}\cdot\frac{5}{\cancel{24}_{3}}=\frac{1}{2}+\frac{1}{3}=\frac{3+2}{6}=\frac{5}{6}$

$\frac{1}{1}=\frac{16}{4}$

b) $\frac{\frac{7}{4}-4}{7-\frac{4}{7}}=\frac{\frac{7}{4}-\frac{16}{4}}{\frac{49}{7}-\frac{4}{7}}=\frac{-\frac{9}{4}}{\frac{45}{7}}=-\frac{9}{4}:\frac{45}{7}=-\frac{\cancel{9}^{1}}{4}\cdot\frac{7}{\cancel{45}_{5}}=-\frac{7}{20}$

$\frac{7}{1}=\frac{49}{7}$

Rozlož na součin

c) $(4a)^2-9\cdot 9=$ $16a^2-81=(4a-9)(4a+9)$ (rovnou; postupně)

Zjednoduš

d) $\left(\frac{3y}{2}+2\right)^2=$ $\frac{9y^2}{4}+6y+4$ (vzorec; $2\cdot\frac{3y}{2}\cdot 2$)

jde: $\left(\frac{3y}{2}+2\right)\left(\frac{3y}{2}+2\right)=\frac{9y^2}{4}+3y+3y+4=\frac{9y^2}{4}+6y+4$

Zjednodušte a rozložte na součin

e) $(3n+7)\cdot(-4n+3n)+n\cdot(4n+9)=$ $-3n^2-7n+4n^2+9n=n^2+2n=n\cdot(n+2)$ ($-4n+3n=-n$)

Řeš rovnici:

f) $2{,}5\cdot(2x-0{,}4)+x=2{,}5x+0{,}4$ /·10 (jeden člen; rozš.)

$5x-1+x=2{,}5x+0{,}4$ /·10

$25\cdot(2x-0{,}4)+10x=25x+4$

$50x-10+10x=25x+4$

$60x-10=25x+4$

$60x-25x=4+10$

$35x=14$ /:7

$5x=2$ /:2

$x=\frac{2}{5}$

jde: $x=0{,}4$

Řeš rovnici:

g) $y-\frac{2-5y}{10}=\frac{5y-8}{15}-2$ /·30

mezivýpočet: $30y-3\cdot(2-5y)=2\cdot(5y-8)-60$

$30y-6+15y=10y-16-60$

$-6+45y=10y-76$

$45y-10y=-76+6$

$35y=-70$ /:35

$y=-2$

Test z aritmetiky 18
Cermat 2021 PAD (12b)

a) $\left(\frac{5}{8}\cdot\frac{10}{9}-\frac{4}{9}\right):\left(8\cdot\frac{1}{6}\right)=$ $\left(\frac{25}{36}-\frac{16}{36}\right):\left(\frac{4}{3}\right)=\frac{9}{36}\cdot\frac{3}{4}=\frac{3}{16}$

b) $\frac{2-\frac{13}{10}}{\frac{5}{3}-\frac{1}{2}}=$ $\frac{\frac{20}{10}-\frac{13}{10}}{\frac{10-3}{6}}=\frac{\frac{7}{10}}{\frac{7}{6}}=\frac{7}{10}:\frac{7}{6}=\frac{7}{10}\cdot\frac{6}{7}=\frac{3}{5}$

Rozlož na součin podle vzorce

c) $9a^2-30a+25=$ $(3a-5)^2$

$(A-B)^2$

Zjednodušte

d) $(3x+y)\cdot(3x-2)=$ $9x^2-6x+3xy-2y$

VZOREC

e) $(4n-1)\cdot(4n+1)-8n\cdot(n-1)=$ $16n^2-1-8n^2+8n=8n^2+8n-1$

$(4n-1)(4n+1)=16n^2+4n-4n+1$

Řeš rovnici:

f) $0{,}3\cdot 2-0{,}5x\cdot 2+0{,}4x=x+3{,}8$

$0{,}6-x+0{,}4x=x+3{,}8 \quad /\cdot 10$

$6-10x+4x=10x+38$

$6-6x=10x+38$

$-6x-10x=38-6$

$-16x=32 \quad /:(-16)$

$x=-2$

Řeš rovnici:

g) $\frac{3}{4}\cdot(4-y)+\frac{3}{2}\cdot(y+2)=6+\frac{3y}{2} \quad /\cdot 4$

$3\cdot(4-y)+6\cdot(y+2)=24+6y$

$3-\frac{3}{4}y+\frac{3}{2}y+3=6+\frac{3y}{2} \quad /\cdot 4$

$12-3y+6y+12=24+6y$

$24+3y=24+6y$

$3y-6y=24-24$

$-3y=0 \quad /:(-3)$

$y=0$

Test z aritmetiky 19
Cermat 2021 PBD (13b)

a) $\sqrt{\frac{16}{0,1}+9} = \sqrt{160+9} = \sqrt{169} = 13$

$\hookrightarrow 16:0,1 = 160:1 = 160$

b) $\dfrac{2-\frac{4}{7}}{3-\frac{13}{21}} = \dfrac{\frac{14}{7}-\frac{4}{7}}{\frac{63}{21}-\frac{13}{21}} = \dfrac{\frac{10}{7}}{\frac{50}{21}} = \frac{10}{7}\cdot\frac{21}{50} = \frac{3}{5}$

$\frac{3}{1} = \frac{63}{21}$

c) $\left(\frac{3}{8}-\frac{2}{5}\right)\cdot 5-\frac{3}{4} = \left(\frac{15-16}{40}\right)\cdot 5 - \frac{3}{4} = \frac{-1}{40}\cdot 5 - \frac{3\cdot 2}{4\cdot 2} = -\frac{1}{8}-\frac{6}{8} = -\frac{7}{8}$

$\hookrightarrow -\frac{1}{40}\cdot\frac{5}{1}$

Zjednoduš

d) $(2-x)\cdot 3x-2x = 6x-3x^2-2x = 4x-3x^2$

e) $\left(y-\frac{1}{2}\right)^2 = y^2-y+\frac{1}{4}$ $\quad (A-B)^2$

ale: $\left(y-\frac{1}{2}\right)\left(y-\frac{1}{2}\right) = y^2-\frac{1}{2}y-\frac{1}{2}y+\frac{1}{4} = y^2-y+\frac{1}{4}$

$-\frac{1}{2}y-\frac{1}{2}y = -\frac{2}{2}y = -y$

Zjednoduš a rozlož na součin

f) $5^2-(a^2+16) = 25-a^2-16 = 9-a^2 = (3-a)(3+a)$

Řeš rovnici:

g) $2x\cdot(3,2-2,3) = 2x-(3,2-2,3)$

$3,2 - 2,3 = 0,9 \qquad 2\cdot 0,9 = 1,8$

$1,8x = 2x-0,9 \quad /\cdot 10$

$18x = 20x-9$

$18x-20x = -9$

$-2x = -9 \quad /\cdot(-1)$

$2x = 9 \quad /:2$

$x = \frac{9}{2}$ nebo $x = 4,5$

Řeš rovnici:

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

$\frac{y+3}{3}+\frac{3y}{8}+\frac{3}{8} = \frac{2y-1}{4}+1 \quad /\cdot 24$

$8y+24+9y+9 = 12y-6+24$

$17y+33 = 12y+18$

$17y-12y = 18-33$

$5y = -15 \quad /:5$

$y = -3$

Test z aritmetiky 20
Cermat 2021 PCD (12b)

a) $\left(\frac{3}{4}+\frac{13}{6}\right)\cdot\left(\frac{2}{5}-1\right)=$ $\left(\frac{9}{12}+\frac{26}{12}\right)\cdot\left(\frac{2}{5}-\frac{5}{5}\right)=\frac{35}{12}\cdot\frac{(-3)}{5}=-\frac{7}{4}$

b) $\dfrac{\frac{3}{5}\cdot 2-4\cdot\frac{2}{7}}{2}=$ $\dfrac{\frac{6}{5}-\frac{8}{7}}{2}=\dfrac{\frac{42}{35}-\frac{40}{35}}{2}=\dfrac{\frac{2}{35}}{2}=\frac{2}{35}:2=\frac{2}{35}\cdot\frac{1}{2}=\frac{1}{35}$

Rozlož na součin podle vzorce

c) $(4\cdot a)^2-81=$ $(4a-9)(4a+9)$ (A^2-B^2, $16a^2$)

Zjednodušte

d) $2\cdot(3y-x)\cdot(5-y)=$ $(6y-2x)(5-y)=30y-6y^2-10x+2xy$

$2\cdot(3y-x)(5-y)=2\cdot[15-3y^2-5x+xy]$

e) $(4n+1)^2+3\cdot(n-1)-(3n+n)\cdot 2n=$ $16n^2+8n+1+3n-3-8n^2=8n^2+11n-2$ (4n; VZOREC)

alte: $(4n+1)(4n+1)=16n^2+4n+4n+1$

Řeš rovnici:

f) $0{,}4\cdot 0{,}1\,x+0{,}32:0{,}1=0{,}2x$ ($0{,}4\cdot 0{,}1=0{,}04$; $0{,}32:0{,}1=3{,}2$)

$0{,}04x+3{,}2=0{,}2x \quad /\cdot 100$
$4x+320=20x$
$320=20x-4x$
$320=16x \quad /:16$
$x=20$

Řeš rovnici:

g) $\frac{y-4}{5}-\frac{y}{10}=\frac{3+y}{2}-2 \quad /\cdot 10$

$2y-8-y=15+5y-20$
$y-8=5y-5$
$y-5y=-5+8$
$-4y=3 \quad /:(-4)$
$y=-\frac{3}{4}$ $\quad y=-0{,}75$

Test z aritmetiky 21
Cermat 2021 PDD (13b)

a) $\frac{0{,}25}{0{,}025} : 0{,}2 =$ $10 : 0{,}2 = 100 : 2 = 50$

↳ $0{,}25 : 0{,}025 = 250 : 25 = 10$

b) $\left(\frac{5}{8} - \frac{5}{12}\right) \cdot 4 - 2 \cdot \left(\frac{3}{4} - \frac{2}{3}\right) =$ $\left(\frac{15}{24} - \frac{10}{24}\right) \cdot 4 - 2 \cdot \left(\frac{9}{12} - \frac{8}{12}\right) = \frac{5}{24} \cdot 4 - 2 \cdot \frac{1}{12} = \frac{5}{6} - \frac{1}{6} = \frac{4}{6} = \frac{2}{3}$

c) $\frac{\left(\frac{27}{10} \cdot \frac{5}{9} - 4\right) : 3}{5} =$ $\frac{\left(\frac{3}{2} - \frac{8}{2}\right) : \frac{3}{1}}{5} = \frac{-\frac{5}{2} \cdot \frac{1}{3}}{5} = \frac{-\frac{5}{6}}{5} = -\frac{5}{6} : 5 = -\frac{5}{6} \cdot \frac{1}{5} = -\frac{1}{6}$

Z daného výrazu vytkněte (- 3x).

d) $-6x^2 - 3x + 9xy =$ $(-3x) \cdot (2x + 1 - 3y)$

↳ NEJSEM SI JISTÝ ? ZK: ROZNÁSOBÍME

Zjednoduš a rozlož na součin

f) $(5-y)(5+y) + 3 \cdot (y^2 - 10) - (2y - 3) \cdot y =$ $25 - y^2 + 3y^2 - 30 - 2y^2 + 3y$ $= 3y - 5$

↳ VZOREC: $(5-y)(5+y) = 25 + 5y - 5y - y$

Doplňte čísla tak, aby platila rovnost.

e) $(7 \cdot a - 4 \cdot b)^2 = 13 \cdot a^2 - 56ab + (4 \cdot b)^2$

$(A - B)^2 = A^2 - 2AB + B^2$, $B = 4b$

$2 \cdot A \cdot B$

$2AB = 56ab = 2 \cdot \square \cdot 4b$

$56ab : 2 = 28ab$

$28ab : 4b = 7a$

Řeš rovnici:

g) $2{,}5 \cdot (2 - 3x) = \frac{5x + 10}{2}$

$5 - 7{,}5x = \frac{5x + 10}{2}$ / ·2 !

$10 - 15x = 5x + 10$

$-15x - 5x = 10 - 10$

$-20x = 0$ / :(-20)

$x = 0$

$5 \cdot (2 - 3x) = 5x + 10$

Řeš rovnici:

h) $\frac{5}{3} \cdot (y-1) + \frac{5}{6} \cdot (11 - 2y) - \frac{3}{4} \cdot y = 0$ / ·12 !

$\frac{5}{3}y - \frac{5}{3} + \frac{55}{6} - \frac{10y}{6} - \frac{3}{4}y = 0$ / ·12

$20 \cdot (y-1) + 10 \cdot (11 - 2y) - 9y = 0$

$20y - 20 + 110 - 20y - 9y = 0$

$90 - 9y = 0$

$-9y = -90$ / :(-9)

$y = 10$

Test z aritmetiky 22
Cermat 2022 PAD (13b)

a) $\frac{7^2-\sqrt{7^2}}{\sqrt{49}} = \frac{49-7}{7} = \frac{42}{7} = 6$

b) $\frac{8}{5}\cdot\left(\frac{5}{6}\cdot\frac{7}{10}-\frac{5}{6}\right) = \frac{8}{5}\cdot\left(\frac{7}{12}-\frac{10}{12}\right) = \frac{8}{5}\cdot\left(-\frac{3}{12}\right) = -\frac{8}{5}\cdot\frac{1}{4} = -\frac{2}{5}$

$\mapsto \frac{12-10}{15}$

c) $\frac{\left(\frac{4}{5}-\frac{2}{3}\right)\cdot\frac{5}{8}}{\frac{2}{3}} = \frac{\frac{2}{15}\cdot\frac{5}{8}}{\frac{2}{3}} = \frac{\frac{1}{12}}{\frac{2}{3}} = \frac{1}{12}\cdot\frac{3}{2} = \frac{1}{8}$

Z daného výrazu vytkněte 3y.

d) $3y^2-9y+6xy = 3y\cdot(y-3+2x)$

$3y^2:3y=y \quad -9y:3y=-3 \quad 6xy:3y=2x$

Zjednoduš

vzorec $(a+b)^2$

e) $\left(x+\frac{3}{2}\right)^2 = x^2+3x+\frac{9}{4}$

zozn. $\left(x+\frac{3}{2}\right)\cdot\left(x+\frac{3}{2}\right) = x^2+\frac{3}{2}x+\frac{3}{2}x+\frac{9}{4} = x^2+\frac{6}{2}x+\frac{9}{4} = x^2+3x+\frac{9}{4}$

Zjednoduš a rozlož na součin

f) $(4+3n)\cdot(3n-2n)-(n-1)\cdot 5n = 4n+3n^2-5n^2+5n = -2n^2+9n = n\cdot(-2n+9)$

$(4+3n)\cdot n \quad -5n\cdot(n-1)$

Řeš rovnici:

g) $5\cdot 0{,}4-3x:2=0{,}5x+7$

$5 \cdot 0{,}4 = 2{,}0$

$2-1{,}5x = 0{,}5x+7$

$-1{,}5x-0{,}5x = 7-2$

$-2x = 5 \quad /:(-2)$

$x=-\frac{5}{2} \qquad x=-2{,}5$

Řeš rovnici:

h) $\frac{3-y}{3}+\frac{3}{5}\cdot(y+1)+\frac{y}{3}=y \quad /\cdot 15$

z hlavy: $15\cdot\frac{3}{5}\cdot(y+1)$

$9\cdot(y+1)$

$\frac{3-y}{3}+\frac{3}{5}y+\frac{3}{5}+\frac{y}{3}=y \quad /\cdot 15$

$15-5y+9y+3+5y=15y$

$9y+24=15y$

$9y-15y=-24$

$-6y=-24 \quad /:(-6)$

$y=4$

Test z aritmetiky 23
Cermat 2022 PBD (13b)

a) $(-6)^2-3\cdot(-3)=$ $36+9=45$

$(-6)(-6)$

b) $\frac{7}{5}\cdot\frac{3}{8}\cdot\frac{10}{21}+\frac{3}{10}=\frac{1}{4}\cdot\frac{2}{3}+\frac{3}{10}=\frac{1}{4}+\frac{3}{10}=\frac{5}{20}+\frac{6}{20}=\frac{11}{20}$

c) $\frac{2\cdot\frac{1}{4}-\frac{5}{8}}{3\cdot\frac{5}{12}}=\frac{\frac{2}{8}-\frac{5}{8}}{\frac{5}{4}}=\frac{-\frac{3}{8}}{\frac{5}{4}}=-\frac{3}{8}:\frac{5}{4}=-\frac{3}{2}\cdot\frac{4}{5}=-\frac{3}{10}$

$\frac{3}{1}\cdot\frac{5}{12}$

Uprav a rozlož na součin

d) $x\cdot x-x+2x^2=$ $x^2-x+2x^2=3x^2-x=x\cdot(3x-1)$

UPRAVENO

Zjednoduš

$(A-B)^2$ VZOREC $\rightarrow$

e) $(5b-0{,}4a)^2=$ $25b^2-4ab+0{,}16a^2$

ROZ: $(5b-0{,}4a)(5b-0{,}4a)=25b^2-2ab-2ab+0{,}16a^2=25b^2-4ab+0{,}16a^2$

f) $(2n-3)\cdot(4n-2)+(n-3)\cdot(n+3)=$ $8n^2-4n-12n+6+n^2-9=9n^2-16n-3$

VZOREC

ROZ: $n^2-3n+3n-9$

Řeš rovnici:

g) $5\cdot(0{,}2x+1)=(8-6x):2$

$x+5=4-3x$

$x+3x=4-5$

$4x=-1 \quad /:4$

$x=-\frac{1}{4}$ $\quad$ $x=-0{,}25$

Řeš rovnici:

h) $\frac{y-5}{2}+\frac{3-y}{6}=1-\frac{2y}{3} \quad /\cdot 6$

$3y-15+3-y=6-4y$

$2y-12=6-4y$

$2y+4y=6+12$

$6y=18 \quad /:6$

$y=3$

Test z aritmetiky 24
Cermat 2022 PCD (13b)

a) $\frac{10^2\cdot(10^2-1)}{10\cdot 10^2+10^2}=$ $\frac{100\cdot(100-1)}{10\cdot 100+100}=\frac{100\cdot 99}{1000+100}=\frac{\cancel{100}^{1}\cdot 99}{\cancel{1100}^{11}}=\frac{\cancel{99}^{9}}{\cancel{11}^{1}}=9$

b) $\frac{1}{3}\cdot\left(5-\frac{13}{5}\right):20=$ $\frac{\cancel{1}^{1}}{\cancel{3}}\cdot\frac{\cancel{12}^{4}}{5}:20=\frac{\cancel{4}^{1}}{5}\cdot\frac{1}{\cancel{20}^{5}}=\frac{1}{25}$

$L_2\ \frac{25}{5}-\frac{13}{5}$

c) $\frac{\frac{2}{3}-\frac{3}{2}}{\frac{2}{3}:\frac{3}{2}}=$ $\frac{\frac{4-9}{6}}{\frac{2}{3}\cdot\frac{2}{3}}=\frac{-\frac{5}{6}}{\frac{4}{9}}=-\frac{5}{6}:\frac{4}{9}=-\frac{5}{\cancel{6}_{2}}\cdot\frac{\cancel{9}^{3}}{4}=-\frac{15}{8}$

! NEKRÁTIT U ⊙ !

Uprav a rozlož na součin

d) $(4+x)\cdot x+2x^2=$ $4x+x^2+2x^2=4x+3x^2=x\cdot(4+3x)$ (úprav)

Zjednoduš

e) $(y\underset{-2y}{-3y})\cdot(y\underset{4y}{+3y})=$ $-2y\cdot 4y=-8y^2$

f) $(-n-1)^2+(1+4n)\cdot(1+4n)=$ (vzorec:) $n^2+2n+1+1+4n+4n+16n^2=17n^2+10n+2$

$(-n-1)(-n-1)=n^2+n+n+1$

Řeš rovnici:

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

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

$6x-3=-x-3$

$6x+x=-3+3$

$7x=0\quad /:7$

$x=0$

$6x-3+\frac{2}{3}=\frac{2}{3}-x-3\quad /\cdot 3$

$18x-9+2=2-3x-9$

$18x-7=-3x-7$

$18x+3x=-7+7$

$21x=0\quad /:21$

$x=0$

Řeš rovnici:

h) $\frac{y+1}{6}-\frac{3y}{2}=2+\frac{0{,}5-y}{3}\quad /\cdot 6$ (2 · 0,5 = 1)

$y+1-9y=12+1-2y$

$-8y+1=13-2y$

$-8y+2y=13-1$

$-6y=12\quad /:-6$

$y=-2$

Test z aritmetiky 25
Cermat 2022 PDD (14b)

a) $(-3)^2-5^2-4\cdot(-4)=$

b) $(0{,}08-1):0{,}2=$

c) $\left(\frac{12}{5}\cdot\frac{3}{20}-\frac{5\cdot3}{5\cdot20}\right):\frac{7}{25}=$

d) $\frac{12}{2+\frac{2}{3}}\cdot\frac{2\cdot\frac{2}{3}}{18}=$

Doplňte čísla tak, aby platila rovnost.

e) $(y+5)^2=y^2+10y+25$

Zjednoduš

f) $(10x-8)-x\cdot\sqrt{100-64}=$

g) $(6n+1)\cdot(1-2n-4n)+(1-2n)\cdot(-4n)=$

Řeš rovnici:

h) $x+0{,}2\cdot(5x+0{,}9)=x:5$

Řeš rovnici:

i) $7\cdot\frac{y-3}{6}-\frac{6y+6}{9}=\frac{1}{3}$

Test z aritmetiky 26
Cermat 2023 PAD (12b)

a) $\frac{5}{9}-\frac{5}{9}:5=$

b) $\frac{4-7}{8}\cdot\frac{16}{21}=$

c) $\dfrac{\frac{3}{5}:\left(\frac{2}{5}+\frac{1}{2}\right)}{\frac{7}{6}+\frac{7}{10}}=$

Uprav a rozlož na součin

d) $2\cdot(x^2-x)+x=$

Zjednoduš

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

f) $3n\cdot(2-n+2n)+(2n+1)\cdot(7-n)=$

Řeš rovnici:

g) $0{,}5x+2\cdot(x+2{,}5)=2{,}5\cdot(x+3)$

Řeš rovnici:

h) $\frac{y+10}{15}+\frac{2y}{5}=1-\frac{5-y}{3}$

Test z aritmetiky 27
Cermat 2023 PBD (13b)

a) $\sqrt{(-5)^2}-3^2=$ $\sqrt{25} - 9 = 5 - 9 = -4$

b) $\frac{1}{3}\cdot\frac{1}{2}-\frac{8}{9}=$ $\frac{1}{6} - \frac{8}{9} = \frac{3-16}{18} = -\frac{13}{18}$

c) $\left(2-\frac{5}{6}\right):\frac{5}{3}=$ $\left(\frac{12}{6} - \frac{5}{6}\right) : \frac{5}{3} = \frac{7}{6} \cdot \frac{3}{5} = \frac{7}{10}$

d) $\frac{\frac{2}{3}+\frac{2}{7}}{\left(\frac{9}{14}+\frac{3}{2}\right)\cdot 2}=$ $\frac{\frac{14+6}{21}}{\left(\frac{3}{14}+\frac{21}{14}\right)\cdot 2} = \frac{\frac{20}{21}}{\frac{30}{14}} = \frac{20}{21} : \frac{30}{7} = \frac{20}{21} \cdot \frac{7}{30} = \frac{2}{9}$

Uprav a rozlož na součin

e) $x\cdot(y-3)+3\cdot(x-2y)=$ $xy - 3x + 3x - 6y = xy - 6y = y \cdot (x-6)$

f) Určete pomocí vzorce nejjednodušší výraz, kterým je třeba vynásobit výraz $3a - 2^2$, abychom získali výraz $9a^2 - 16$ $= (3a-4)(3a+4)$

$(3a-4) \cdot \square = (3a-4)(3a+4)$ odp: $3a+4$

g) $(3n+2)^2-n\cdot(3n+4)+(2n-n)\cdot n=$ vzorec $(a+b)^2$ $9n^2 + 12n + 4 - 3n^2 - 4n + n^2 = 7n^2 + 8n + 4$

jiný: $(3n+2)(3n+2) = 9n^2 + 6n + 6n + 4$

Řeš rovnici:

h) $2+0{,}5\cdot(x-3)=0{,}4\cdot(1{,}5x+2)$

$2 + 0{,}5x - 1{,}5 = 0{,}6x + 0{,}8 \quad /\cdot 10$

$20 + 5x - 15 = 6x + 8$

$5x + 5 = 6x + 8$

$5x - 6x = 8 - 5$

$-x = 3 \quad /\cdot(-1)$

$x = -3$

Řeš rovnici:

i) $3\cdot\frac{2y-1}{6}=\frac{3y+2}{8}+\frac{3}{4}\cdot\frac{y-1}{6}$

$\frac{2y-1}{2} = \frac{3y+2}{8} + \frac{y-1}{8} \quad /\cdot 8$

$8y - 4 = 3y + 2 + y - 1$

$8y - 4 = 4y + 1$

$8y - 4y = 1 + 4$

$4y = 5$

$y = \frac{5}{4}$

Test z aritmetiky 28
Cermat 2023 PCD (14b)

a) $4+6:2-5\cdot(-3+5)=$ $4+3-5\cdot 2 = 4+3-10 = 7-10 = -3$

b) $\sqrt{1{,}3^2-1{,}2^2}=$ $\sqrt{1{,}69-1{,}44} = \sqrt{0{,}25} = 0{,}5$

c) $3\cdot\frac{2}{7}-\frac{2}{7}=$ $\frac{6}{7}-\frac{2}{7}=\frac{4}{7}$

d) $1-\frac{14}{5}:2=$ $1-\frac{14}{5}\cdot\frac{1}{2}=\frac{5}{5}-\frac{7}{5}=-\frac{2}{5}$

e) $\dfrac{\frac{3}{4}+\frac{4}{3}}{\frac{5}{7}\cdot\frac{14}{3}}=$ $\dfrac{\frac{9+16}{12}}{\frac{10}{3}}=\dfrac{\frac{25}{12}}{\frac{10}{3}}=\frac{25}{12}:\frac{10}{3}=\frac{25}{12}\cdot\frac{3}{10}=\frac{5}{8}$

Rozlož na součin podle vzorce

f) $4\cdot a^2-9=$ $(2a-3)(2a+3)$

Zjednoduš

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

VZOREC $(A-B)^2$

h) $(4n-3)^2-4n\cdot(4n-3)=$ $16n^2-24n+9-16n^2+12n=-12n+9$

alter: $(4n-3)(4n-3)=16n^2-12n-12n+9$

Řeš rovnici:

i) $0{,}3\cdot(2x+1)=0{,}2x-0{,}7$ /.10

jeden člen → $10\cdot 0{,}3\cdot(2x+1)=3\cdot(2x+1)$!

$3\cdot(2x+1)=2x-7$
$6x+3=2x-7$
$6x-2x=-7-3$
$4x=-10$ /:2
$2x=-5$
$x=-\frac{5}{2}$ nebo $x=-2{,}5$

Řeš rovnici:

j) $y+\frac{5y}{6}=\frac{2y-1}{4}+\frac{y+1}{2}$ /.12

$12y+10y=6y-3+6y+6$
$22y=12y+3$
$22y-12y=3$
$10y=3$
$y=\frac{3}{10}$ nebo $y=0{,}3$

Test z aritmetiky 29
Cermat 2023 PDD (12b)

a) $\dfrac{\frac{2}{3}-1}{\frac{8}{9}}=$ $\quad \dfrac{\frac{2}{3}-\frac{3}{3}}{\frac{8}{9}}=\dfrac{-\frac{1}{3}}{\frac{8}{9}}=-\frac{1}{3}:\frac{8}{9}=-\frac{1}{3}\cdot\frac{9}{8}=-\frac{3}{8}$

b) $2\cdot\frac{1}{6}-\frac{3}{8}\cdot 4=$ $\quad \frac{1}{3}-\frac{3}{2}=\frac{2-9}{6}=-\frac{7}{6}$

c) $\dfrac{\frac{6}{7}-\frac{9}{14}}{\frac{8}{7}+\frac{6}{7}:\frac{3}{2}}=$ $\quad \dfrac{\frac{12}{14}-\frac{9}{14}}{\frac{8}{7}+\frac{6}{7}\cdot\frac{2}{3}}=\dfrac{\frac{3}{14}}{\frac{8}{7}+\frac{4}{7}}=\dfrac{\frac{3}{14}}{\frac{12}{7}}=\frac{3}{14}:\frac{12}{7}=\frac{3}{14}\cdot\frac{7}{12}=\frac{1}{8}$

Uprav a rozlož na součin

d) $49-(-4a)^2=$ $\quad 49-16a^2=(7-4a)(7+4a)$

Zjednoduš

e) $(0{,}3x+0{,}5)^2=$ $\quad$ VZOREC: $2\cdot 0{,}3\cdot 0{,}5$ $\quad 0{,}09x^2+0{,}3x+0{,}25$

alter: $(0{,}3x+0{,}5)(0{,}3x+0{,}5)=0{,}09x^2+0{,}15x+0{,}15x+0{,}25=0{,}09x^2+0{,}3x+0{,}25$ ($0{,}30x$)

f) $n\cdot(2n-1)-(-2n-n)\cdot(3n+2)+(1-2n)\cdot(1+2n)=$ $\quad$ VZOREC: A^2-B^2

$2n^2-n+3n^2+6n+1-4n^2=7n^2+5n+1$

$-3n$, $+3n\cdot(3n+2)$

Řeš rovnici:

g) $\dfrac{2-x}{2}+2x=2{,}5x-3$ $\quad /\cdot 2$

$2-x+4x=5x-6$

$2+3x=5x-6$

$3x-5x=-6-2$

$-2x=-8$ $\quad /:(-2)$

$x=4$

Řeš rovnici:

h) $3\cdot\dfrac{y+1}{2}-\dfrac{y}{3}=\dfrac{3}{2}\cdot\dfrac{2y-3}{3}+\dfrac{3}{2}$

$\dfrac{3y+3}{2}-\dfrac{y}{3}=\dfrac{2y-3}{2}+\dfrac{3}{2}$ $\quad /\cdot 6$

$9y+9-2y=6y-9+9$

$7y+9=6y$

$7y-6y=-9$

$y=-9$

Test z aritmetiky 30
Cermat 2024 PAD (12b)

a) $\left(2:\frac{3}{2}\right):\frac{1}{2}+\left(\frac{5}{6}:\frac{3}{4}\right):\frac{2}{3}=$ $\frac{4}{3}\cdot\frac{2}{1}+\frac{10}{9}\cdot\frac{3}{2}=\frac{8}{3}+\frac{5}{3}=\frac{13}{3}$

$2\cdot\frac{2}{3}=\frac{4}{3}$ $\frac{5}{6}\cdot\frac{4}{3}=\frac{10}{9}$

b) $\frac{\frac{13}{10}-1{,}4}{2\cdot\frac{2}{15}+\frac{1}{6}\cdot 5}=$ $\frac{\frac{13}{10}-\frac{14}{10}}{\frac{4}{30}+\frac{5}{30}}=\frac{-\frac{1}{10}}{\frac{9}{30}}=-\frac{1}{10}:\frac{3}{10}=-\frac{1}{10}\cdot\frac{10}{3}=-\frac{1}{3}$

Rozlož na součin podle vzorce

c) $9a^2-16=$ $(3a-4)(3a+4)$

d) $\left(a-\frac{a}{4}\right)^2=$ $\left(\frac{4}{4}a-\frac{1}{4}a\right)^2=\left(\frac{3}{4}a\right)^2=\frac{9}{16}a^2$

Zjednodušte a výsledek rozložte na součin vytýkáním.

e) $(c-5)\cdot(2-3c)-(c-2c)\cdot 3c-c\cdot 7=$ $2c-3c^2-10+15c+3c^2-7c=10c-10=10\cdot(c-1)$

Řeš rovnici:

f) $-2\cdot(x+4)-3\cdot(x+1)^2=x\cdot(2-3x)$

$-3\cdot(x^2+2x+1)$

$-2x-8-3x^2-6x-3=2x-3x^2$

$-8x-11=2x$

$-8x-2x=11$

$-10x=11$

$x=-1{,}1$

nebo

$x=-\frac{11}{10}$

Řeš rovnici:

g) $6-\frac{3-2y}{5}\cdot 2=4y$

$6-\frac{6-4y}{5}=4y \quad /\cdot 5$

$30-6+4y=20y$

$24+4y=20y$

$4y-20y=-24$

$-16y=-24 \quad /:(-8)$

$2y=3$

$y=\frac{3}{2}$

Test z aritmetiky 31
Cermat 2024 PBD (12b)

a) $\left(\frac{3}{4}+\frac{4}{3}\right)\cdot\left(\frac{2}{3}-\frac{6}{5}\right)=$ $\left(\frac{9+16}{12}\right)\cdot\left(\frac{10-18}{15}\right)=\frac{25}{12}\cdot\frac{-8}{15}=-\frac{5}{12}\cdot\frac{8}{3}=-\frac{10}{9}$

b) $\dfrac{\frac{5}{9}-\frac{3}{2}:\frac{3}{5}}{\frac{2}{3}+\frac{1}{6}-\frac{7}{12}}=$ $\dfrac{\frac{5}{9}-\frac{3}{2}\cdot\frac{5}{3}}{\frac{8+2-7}{12}}=\dfrac{\frac{5}{9}-\frac{5}{2}}{\frac{3}{12}}=\dfrac{\frac{10-45}{18}}{\frac{1}{4}}=\dfrac{-\frac{35}{18}}{\frac{1}{4}}=-\frac{35}{18}\cdot\frac{1}{4}=-\frac{35}{18}\cdot\frac{1}{1}=-\frac{70}{9}$

Zjednodušte

c) $(-3-2x)^2=$ VZOREC: $9+12x+4x^2$ alter: $(-3-2x)(-3-2x)=9+6x+6x+4x^2=9+12x+4x^2$

Uprav a rozlož na součin podle vzorce

d) $6400-(x^2-3600)=$ $6400-x^2+3600=10\,000-x^2=(100-x)(100+x)$

Zjednoduš

e) $(3x+1)^2-x\cdot 7x-(2x-5)\cdot(x+4)=$ VZOREC: $(a+b)^2$ $-(2x^2+8x-5x-20)$ $9x^2+6x+1-7x^2-2x^2-8x+5x+20=3x+21$

alter: $(3x+1)(3x+1)=9x^2+3x+3x+1$

Řeš rovnici:

f) $1{,}6:2-\frac{x}{2}=3\cdot 0{,}7x+3{,}4$

$0{,}8-\frac{x}{2}=2{,}1x+3{,}4 \quad /\cdot 10$

$8-5x=21x+34$

$-5x-21x=34-8$

$-26x=26 \quad /:(-26)$

$x=-1$

Řeš rovnici:

g) $\frac{5-2y}{3}+\frac{y}{9}=\frac{3-y}{6} \quad /\cdot 18$

$30-12y+2y=9-3y$

$30-10y=9-3y$

$-10y+3y=9-30$

$-7y=-21 \quad /:(-7)$

$y=3$

Test z aritmetiky 32
Cermat 2024 PCD (12b)

a) $\dfrac{\frac{7}{5}+3{,}3-\frac{1}{2}}{\frac{1}{15}+\frac{1}{3}}=$

b) $\left(\frac{1}{2}+\frac{1}{3}:\frac{5}{6}\right)-\frac{7}{2}+\frac{3}{5}:\frac{3}{2}-1=$

Zjednodušte

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

Uprav a rozlož na součin podle vzorce

d) $5-(1-x^2)-x\cdot 2x=$

Zjednoduš

e) $(c-7)\cdot(c-7)-(c-5)\cdot 3c+c\cdot(c+c)=$

Řeš rovnici:

f) $\left(x+\frac{1}{2}x\right)\cdot 2=\left(x+\frac{1}{6}x\right)\cdot 2+6$

Řeš rovnici:

g) $\frac{1}{2}\cdot(x+2)-(x-2)^2=6-x^2$

Test z aritmetiky 33
Cermat 2024 PDD (12b)

⊖ : ⊖ → ⊕

a) $\dfrac{\left(\frac{1}{6}-\frac{1}{3}\right):\left(-\frac{5}{3}\right)}{0{,}3}=$ $\dfrac{\left(\frac{1}{6}-\frac{2}{6}\right):\left(-\frac{5}{3}\right)}{\frac{3}{10}}=\dfrac{-\frac{1}{6}:\left(-\frac{5}{3}\right)}{\frac{3}{10}}=\dfrac{\frac{1}{6}\cdot\frac{3}{5}}{\frac{3}{10}}=\dfrac{\frac{1}{10}}{\frac{3}{10}}=\frac{1}{10}\cdot\frac{10}{3}=\frac{1}{3}$

b) $\frac{1}{6}+\frac{1}{3}\cdot\left(\frac{2}{5}-1\right)=$ $\frac{1}{6}+\frac{1}{3}\cdot\left(-\frac{3}{5}\right)=\frac{1}{6}-\frac{1}{5}=\frac{5}{30}-\frac{6}{30}=-\frac{1}{30}$

$\frac{2}{5}-\frac{5}{5}$

Zjednodušte

c) $\left(\frac{1}{3}-4b\right)^2=$ $\frac{1}{9}-\frac{8}{3}b+16b^2$ jiný: $\left(\frac{1}{3}-4b\right)\left(\frac{1}{3}-4b\right)=\frac{1}{9}-\frac{4}{3}b-\frac{4}{3}b+16b^2=\frac{1}{9}-\frac{8}{3}b+16b^2$

Uprav a rozlož na součin.

d) $a\cdot(-a)-2^2\cdot 3a+6a^2=$ (4·3) $-a^2-12a+6a^2=5a^2-12a=a\cdot(5a-12)$

Zjednoduš

e) $(2x+3)^2-x\cdot 6-4\cdot(x-1)^2=$ VZOREC $4x^2+12x+9-6x-4x^2+8x-4=14x+5$
$-4\cdot(x^2-2x+1)$

Řeš rovnici:

f) $x-\dfrac{x-2}{2}=\dfrac{2x}{3}-2$ /·6

$6x-3x+6=4x-12$
$3x+6=4x-12$
$3x-4x=-12-6$
$-x=-18$ /·(-1)
$x=18$

Řeš rovnici:

g) $2\cdot(3x-2{,}5)=-5+3\cdot(3x-2)$

$6x-5=-5+9x-6$
$6x-5=9x-11$
$6x-9x=-11+5$
$-3x=-6$ /:(-3)
$x=2$

Test z aritmetiky 34
Cermat 2025 PAD (11b)

a) $(-3)\cdot\left(\frac{3}{4}-\frac{5}{6}\right)=$

b) $\dfrac{\dfrac{\sqrt{25}}{\sqrt{2\cdot 2}}}{\dfrac{3\cdot(3^2-2\cdot 2)}{\sqrt{5^2-4^2}}}=$

Doplňte čísla tak, aby platila rovnost.

e) $(a+\square)^2=a^2+18a+\square$

Zjednoduš

d) $2-(n+2)\cdot(-n)+(3-n)\cdot(n+1)=$

Uprav a rozlož na součin podle vzorce

e) $x\cdot(18-x)+9\cdot(16-2x)=$

Řeš rovnici:

f) $7\cdot\left(\frac{4}{7}-\frac{x}{10}\right)-5\cdot\left(\frac{x}{25}-\frac{16}{5}\right)=\frac{1}{10}\cdot x$

Řeš rovnici:

g) $y-(y+5)\cdot 0{,}1=0{,}9\,y+0{,}5$

Test z aritmetiky 35
Cermat 2025 PBD (11b)

a) $\left(\frac{11}{5}-\frac{11}{6}\right):\left(-\frac{1}{3}\right)=$ $\left(\frac{66-55}{30}\right):\left(-\frac{1}{3}\right)=\frac{11}{30}:\left(-\frac{1}{3}\right)=-\frac{11}{30}\cdot\frac{3}{1}=-\frac{11}{10}$

b) $\frac{20-\sqrt{4\cdot 3^2}}{3\cdot\sqrt{100-64}}:\frac{4+3}{4\cdot 3}=$ $\frac{20-2\cdot 3}{3\cdot 6}:\frac{7}{12}=\frac{14}{18}\cdot\frac{12}{7}=\frac{4}{3}$

jiné: $-\sqrt{4\cdot 3^2}=-\sqrt{36}=-6$ → odmocňujeme součin

Uprav a rozlož na součin

e) $(2k)^2-k\cdot(1+2k)=$ $4k^2-k-2k^2=2k^2-k=k\cdot(2k-1)$

Zjednoduš

d) $x\cdot 3x-2x\cdot 3-(x-3)^2=$ $3x^2-6x-x^2+6x-9=2x^2-9$

rozbor: $-(x^2-6x+9)$

jiný: $-(x-3)(x-3)=-(x^2-3x-3x+9)=-x^2+6x-9$

e) $7a\cdot(a+3)+2\cdot(1-3a)\cdot(a+5)=$ $7a^2+21a+2a+10-6a^2-30a=a^2-7a+10$

I) $(2-6a)\cdot(a+5)$

II) $2\cdot[a+5-3a^2-15a]$

Řeš rovnici:

f) $\frac{7}{12}x+2\cdot\left(\frac{3}{8}x-1\right)=-3\cdot\left(\frac{x}{9}+1\right)$

bez: $12\cdot\frac{3}{8}x=\frac{9}{2}x$

$\frac{7}{12}x+\frac{3}{4}x-2=-\frac{x}{3}-3 \quad /\cdot 12$

$7x+9x-24=-4x-36$

$16x-24=-4x-36$

$16x+4x=-36+24$

$20x=-12 \quad /:4$

$5x=-3$

$x=-\frac{3}{5}$ nebo $x=-0{,}6$

Řeš soustavu rovnic:

g) $6x+y=14$
$3x+2y=1 \quad /\cdot(-2)$

I. sp.

$6x+y=14$
$-6x-4y=-2$
$-3y=12 \quad /:(-3)$
$y=-4$

$3x+2\cdot(-4)=1$
$3x-8=1$
$3x=1+8$
$3x=9 \quad /:3$
$x=3$

II. sp.

$\rightarrow y=14-6x$

$3x+2\cdot(14-6x)=1$
$3x+28-12x=1$
$-9x=1-28$
$-9x=-27 \quad /:(-9)$
$x=3$
$y=14-6\cdot 3$
$y=-4$

Test z aritmetiky 36
Cermat 2025 PCD (11b)

a) $\frac{\sqrt{10^2-19}}{\sqrt{10^2}}=$ $\frac{\sqrt{100-19}}{\sqrt{100}}=\frac{\sqrt{81}}{10}=\frac{9}{10}$

b) $\frac{\left(\frac{3}{5}\right)^2}{\frac{27}{34}\cdot\left(\frac{2}{3}-\frac{3^2}{5}\right)}=$ $\frac{\frac{9}{25}}{\frac{27}{34}\cdot\left(-\frac{17}{15}\right)}=-\frac{\frac{9}{25}}{\frac{9}{10}}=-\frac{9}{25}:\frac{9}{10}=-\frac{9}{25}\cdot\frac{10}{9}=-\frac{2}{5}$

$\frac{2}{3}-\frac{9}{5}=\frac{10-27}{15}=-\frac{17}{15}$

Zjednoduš

vzorec: $(a-b)^2=a^2-2ab+b^2$ → aller: $(8a-4)(8a-4)=64a^2-32a-32a+16=64a^2-64a+16$

e) $(4+8a-8)^2=$ $(8a-4)^2=64a^2-64a+16$

d) $(2-3x)\cdot 2+(2x)^2-x\cdot(-6)=$ $4-6x+4x^2+6x=4+4x^2$

vzorec: $(a-b)(a+b)=a^2-b^2$ → aller: $(1-2n)(1+2n)=1+2n-2n-4n^2$

e) $(1-2n)\cdot(1-2n+4n)-2n\cdot(1-3n)+(3n-1)=$ $1-4n^2-2n+6n^2+3n-1=2n^2+n$

Řeš rovnici:

f) $5x+\frac{2}{15}+\frac{1}{15}x=\frac{2}{3}x-\frac{3}{5}$ /·15

$75x+2+x=10x-9$

$75x+x-10x=-9-2$

$66x=-11$ /:11

$6x=-1$

$x=-\frac{1}{6}$

Řeš rovnici:

g) $4-\frac{7-3y}{5}=3+\frac{7y-4}{10}$ /·10

$40-14+6y=30+7y-4$

$26+6y=26+7y$

$6y-7y=26-26$

$-y=0$

$y=0$

Test z aritmetiky 37
Cermat 2025 PDD (11b)

a) $\left(\frac{7}{5}-\frac{7}{4}\right):\frac{2}{5}=$ $\left(\frac{28-35}{20}\right):\frac{2}{5}=\frac{-7}{20}:\frac{2}{5}=-\frac{7}{\cancel{20}_{4}}\cdot\frac{\cancel{5}^{1}}{2}=-\frac{7}{8}$

b) $\dfrac{\left(1+\frac{1}{7}\right)^2\cdot\frac{7}{4}}{\sqrt{25}-\frac{3^2}{5}}=$ $\dfrac{\left(\frac{7}{7}+\frac{1}{7}\right)^2\cdot\frac{7}{4}}{5-\frac{9}{5}}=\dfrac{\left(\frac{8}{7}\right)^2\cdot\frac{7}{4}}{\frac{25}{5}-\frac{9}{5}}=\dfrac{\frac{\overset{16}{\cancel{64}}}{49}\cdot\frac{\cancel{7}^{1}}{\cancel{4}_{1}}}{\frac{16}{5}}=\frac{16}{7}:\frac{16}{5}=\frac{16}{7}\cdot\frac{5}{16}=\frac{5}{7}$

Uprav a rozlož na součin

c) $k\cdot(k-9)+9\cdot(k-16)=$ $k^2-9k+9k-144=k^2-144=(k-12)(k+12)$

Zjednoduš

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

e) $(x-15)\cdot(\overset{x}{2x-x})-(5x-8)\cdot(\overset{-2}{-3+1})-1=$ $x^2-15x+10x-16-1=x^2-5x-17$
$+2\cdot(5x-8)$

Řeš rovnici:

f) $0{,}1x+5\cdot(0{,}04x-3{,}2)=4-0{,}7x$

$0{,}1x+0{,}2x-16=4-0{,}7x \quad /\cdot 10$
$x+2x-160=40-7x$
$3x+7x=40+160$
$10x=200$
$x=20$

g) Řeš soustavu rovnic:

3x – (y+1) = 10
2x – 9 = y

$3x-y-1=10$ (dosaz.)
$3x-(2x-9)-1=10$
$3x-2x+9-1=10$
$x+8=10$
$x=2$
$y=2\cdot 2-9$
$y=-5$

11.2p

$3x-y-1=10$
$2x-y=9 \quad /\cdot(-1)$
$3x-y=11$
$-2x+y=-9$
$x=2$
$-4+y=-9$
$y=-5$

Test z aritmetiky 38
Cermat 2026 PID (13b)

a) $-5\cdot 5+(-12)^2-13^2=$ $-25+144-169=-50$

b) $\sqrt{1-0{,}8^2}:6=$ $\sqrt{1-0{,}64}:6=\sqrt{0{,}36}:6=0{,}6:6=0{,}1$

c) $\frac{3\cdot 5}{3\cdot 24}+\frac{5}{24}\cdot\frac{7}{3}=$ $\frac{15}{72}+\frac{35}{72}=\frac{20}{72}=\frac{10}{36}=\frac{5}{18}$

d) $\dfrac{\left(\frac{\cancel{125}^{5}}{\cancel{21}_{3}}\cdot\frac{\cancel{7}^{1}}{\cancel{25}_{1}}-9\right):4}{11}=$ $\dfrac{\left(\frac{5}{3}-\frac{27}{3}\right):4}{11}=\dfrac{\left(-\frac{\cancel{22}^{11}}{3}\right)\cdot\frac{1}{\cancel{4}_{2}}}{11}=-\dfrac{\frac{11}{6}}{11}=-\frac{11}{6}:11=-\frac{11}{6}\cdot\frac{1}{11}=-\frac{1}{6}$

Upravte a rozložte na součin

e) $3y\cdot(x+3y)-y=$ $3xy+9y^2-y=y\cdot(3x+9y-1)$

f) $n\cdot(9n-1)+n-4=$ $9n^2-n+n-4=9n^2-4=(3n+2)(3n-2)$

Zjednodušte

g) $4\cdot(2x\cdot x-x)-3+(2x+1)(3-4x)=$ $8x^2-4x-3+6x-8x^2+3-4x=-2x$

Řeš rovnici:

h) $3\cdot\left(4-\frac{3}{4}x\right)+x=1-\frac{5}{4}x$

$12-\frac{9}{4}x+x=1-\frac{5}{4}x \quad /\cdot 4$

$48-9x+4x=4-5x$

$48-5x=4-5x$

$-5x+5x=4-48$

$0=-44$

ROVNICE NEMÁ ŘEŠENÍ

i) Řeš soustavu rovnic:

$2x-y=7 \quad /\cdot(-2)$
$x-2y=11$

$-4x+2y=-14$
$x-2y=11$
$-3x=-3$
$x=1$

$1-y=7$
$-y=7-2$
$-y=5 \quad /\cdot(-1)$
$y=-5$

ekv. úp. → $x=11+2y$

$2\cdot(11+2y)-y=7$
$22+4y-y=7$
$3y=7-22$
$3y=-15 \quad /:3$
$y=-5$

$x=11+2\cdot(-5)$
$x=11-10$
$x=1$