Krácení lomených výrazů

Zjednodušte výrazy a určete podmínky, za kterých mají smysl:

1. $\frac{24xy^2}{18x^3yz} =$

2. $\frac{12a^4b^5c^3}{15a^6bc^3} =$

3. $\frac{2x+4y}{8} =$

4. $\frac{6a+9ab}{27a} =$

5. $\frac{5x^2-5y^2}{10x+10y} =$

6. $\frac{a^2+2ab+b^2}{7ax+7bx} =$

7. $\frac{121-p^2}{3p^2+66p+363} =$

8. $\frac{5a^2x-20x}{25a^2+50a} =$

9. $\frac{21ab-7ab^2}{14ab^3-42ab^2} =$

10. $\frac{2ax+2ay+2bx+2by}{ax-ay+bx-by} =$

11. $\frac{\frac{x^3}{y^2}}{\frac{x}{y^3}} =$

12. $\frac{\frac{a+b}{a-b}}{\frac{2a+2b}{4a-4b}} =$

13. $\frac{\frac{4x^2+20x+25}{4x+10}}{\frac{25-4x^2}{8x-20}} =$ ..

Řešení:

Zjednodušte výrazy a určete podmínky, za kterých mají smysl:

1. $\frac{24xy^2}{18x^3yz} = \frac{4y}{3x^2z};\ x, y, z \neq 0$

2. $\frac{12a^4b^5c^3}{15a^6bc^3} = \frac{4b^4}{5a^2};\ a, b, c \neq 0$

3. $\frac{2x+4y}{8} = \frac{2(x+2y)}{8} = \frac{(x+2y)}{4}$

4. $\frac{6a+9ab}{27a} = \frac{3a(2+3b)}{27} = \frac{a(2+3b)}{9}$

5. $\frac{5x^2-5y^2}{10x+10y} = \frac{5(x-y)(x+y)}{10(x+y)} = \frac{x-y}{2};\ x \neq -y$

6. $\frac{a^2+2ab+b^2}{7ax+7bx} = \frac{(a+b)^2}{7x(a+b)} = \frac{a+b}{7x};\ x \neq 0$

7. $\frac{121-p^2}{3p^2+66p+363} = \frac{(11-p)(11+p)}{3(p^2+22p+121)} = \frac{(11-p)(11+p)}{3(p+11)^2} = \frac{11-p}{3(p+11)};\ p \neq -11$

8. $\frac{5a^2x-20x}{25a^2+50a} = \frac{5x(a^2-4)}{25a(a+2)} = \frac{5x(a-2)(a+2)}{25a(a+2)} = \frac{x(a-2)}{5a};\ a \neq 0;\ a \neq -2$

9. $\dfrac{21ab-7ab^2}{14ab^3-42ab^2}=\dfrac{7ab(3-b)}{14ab^2(b-3)}=\dfrac{-1}{2b};\ a,b\neq 0,\ b\neq 3$

10. $\dfrac{2ax+2ay+2bx+2by}{ax-ay+bx-by}=$

11. $\dfrac{\dfrac{x^3}{y^2}}{\dfrac{x}{y^3}}=\dfrac{x^3}{y^2}\cdot\dfrac{y^3}{x}=x^2y;\ x,y\neq 0$

12. $\dfrac{\dfrac{a+b}{a-b}}{\dfrac{2a+2b}{4a-4b}}=\dfrac{a+b}{a-b}\cdot\dfrac{4a-4b}{2a+2b}=\dfrac{a+b}{a-b}\cdot\dfrac{4(a-b)}{2(a+b)}=2;\ a\neq\pm b$

13. $\dfrac{\dfrac{4x^2+20x+25}{4x+10}}{\dfrac{25-4x^2}{8x-20}}=\dfrac{4x^2+20x+25}{4x+10}\cdot\dfrac{8x-20}{25-4x^2}=\dfrac{(2x+5)^2}{2(2x+5)}\cdot\dfrac{4(2x-5)}{(5-2x)(5+2x)}=2;\ x\neq\pm\dfrac{5}{2}$