2016/2017

Upravte algebraický výraz, stanovte podmínky řešitelnosti

1. $$\left(\frac{\frac{1}{x}}{1+\frac{1}{x}}-\frac{1-\frac{1}{x}}{\frac{1}{x}}\right):\left(\frac{x^{-1}}{1-x^{-1}}-\frac{1+x^{-1}}{x^{-1}}\right)$$

2. $$\frac{1-\frac{a}{a-b}+\frac{b}{a+b}}{1-\frac{a}{a+b}+\frac{b}{a-b}}$$

3. $$\frac{\frac{x}{x-1}+\frac{x-1}{x}}{\frac{x-1}{x}-\frac{x}{x-1}}$$

4. $$\frac{\frac{a^2+ab}{2a^2-ab-3b^2}}{\frac{5a^2-4ab}{4a^2-9b^2}}$$

5. $$\frac{1+\frac{3}{x}-\frac{4}{x^2}}{1+\frac{2}{x}-\frac{3}{x^2}}$$

6. $$\frac{1}{a+b}\cdot\left(1+\frac{a}{a-b}\right)-\frac{1}{a-b}\cdot\left(1-\frac{2b}{a-b}\right)$$

7. $$\frac{\frac{a+b}{a-b}-\frac{a-b}{a+b}}{\frac{a}{b}+\frac{b}{a}}$$

8. $$\frac{1}{a-b}\cdot\left(1+\frac{a}{a+b}\right)-\frac{1}{a+b}\cdot\left(1+\frac{b}{a-b}\right)$$

9. $$1-\frac{\left(4-a^2\right)^{-1}-(2-a)^{-1}}{(2+a)^{-1}+\left(4-a^2\right)^{-1}}$$

10. $$\frac{\frac{a^2-9b^2}{a^2+ab-6b^2}}{\frac{7a-21b}{6a^2-12ab}}$$

11. $$\frac{2-\frac{5}{x}+\frac{3}{x^2}}{\frac{4}{x}-\frac{3}{x^2}-1}$$

12. $$\frac{1}{x+y}\left(y-\frac{x}{x-y}\right)+\frac{1}{x-y}\left(y+\frac{x}{x+y}\right)$$

13. $$\frac{\frac{x}{x+y}+\frac{y}{x-y}}{\frac{y}{x}+\frac{x}{y}}$$

14. $$1+\frac{\left(4-a^2\right)^{-\frac{1}{2}}-(2-a)^{-\frac{1}{2}}}{(2+a)^{-\frac{1}{2}}+\left(4-a^2\right)^{-\frac{1}{2}}}\cdot\frac{1-a}{1-\sqrt{2-a}}$$

15. $$\frac{1}{x+y}\left(x-\frac{y}{x-y}\right)+\frac{1}{x-y}\left(x+\frac{y}{x+y}\right)$$

16. $$\left(\frac{\frac{1}{x}}{1-\frac{1}{x}}-\frac{1-\frac{1}{x}}{\frac{1}{x}}\right):\left(\frac{x^{-1}}{1+x^{-1}}+\frac{1-x^{-1}}{x^{-1}}\right)$$

17. $$\frac{\frac{x^2-9y^2}{x^2-xy}}{\frac{x^2+3xy}{y-x}}$$

18. $$\left(\frac{a}{a+b}+\frac{b}{a-b}+1\right):\left(\frac{a}{a-b}-\frac{b}{a+b}+1\right)$$

19. $$\left(\frac{a}{a-b}-\frac{b}{a+b}-1\right):\left(\frac{a}{a+b}+\frac{b}{a-b}+1\right)$$

20.
$$\frac{\dfrac{1+x}{1-x+x^2}-\dfrac{1-x}{1+x+x^2}}{\dfrac{1-x}{1-x+x^2}+\dfrac{1+x}{1+x+x^2}}$$

21.
$$\left(\frac{a}{a-b}-\frac{b}{a+b}+1\right):\left(\frac{a}{a+b}+\frac{b}{a-b}-1\right)$$

22.
$$\frac{\dfrac{2r}{r+s}+\dfrac{3s}{r-s}-2}{\dfrac{3r}{r-s}+\dfrac{2s}{r+s}-2}$$

23.
$$\frac{\dfrac{1-x}{1-x+x^2}+\dfrac{1+x}{1+x+x^2}}{\dfrac{1+x}{1+x+x^2}-\dfrac{1-x}{1-x+x^2}}$$

24.
$$\frac{\dfrac{a+b}{a-b}+\dfrac{a-b}{a+b}}{\dfrac{a}{b}+\dfrac{b}{a}}$$

25.
$$\frac{1+\dfrac{a}{a^2-b^2}-\dfrac{b}{a+b}}{1+\dfrac{b}{a^2-b^2}-\dfrac{a}{a+b}}$$

2016/2017

Upravte algebraický výraz, stanovte podmínky řešitelnosti

1. $\dfrac{x-1}{x+1}, \qquad x \neq 0, \pm 1,$

2. $-\dfrac{b}{a}, \qquad a \neq \pm b, a \neq 0,$

3. $\dfrac{2\,x^2 - 2\,x + 1}{1 - 2\,x}, \qquad x \neq 0, \pm 1.$

4. $\dfrac{2a + 3b}{5a - 4b}, \qquad a \neq b, \pm\dfrac{3}{2}b, \dfrac{4}{5}b.$

5. $\dfrac{x+4}{x+3}, \qquad x \neq 0, 1, -3.$

6. $\dfrac{a}{a^2 - b^2}, \qquad a \neq \pm b$

7. $\dfrac{(2ab)^2}{a^4 - b^4}, \qquad a \neq \pm b, a \neq 0, b \neq 0,$

8. $\dfrac{1}{a-b}, \qquad a \neq \pm b$

9. $\dfrac{4}{3-a}, \qquad a \neq \pm 2, 3$

10. $\dfrac{6a}{7}, \quad a \neq 0, 2b, \pm 3b.$

11. $\dfrac{2x-3}{3-x}, \qquad x \neq 0, 1, 3.$

12. $\dfrac{2xy}{x^2 - y^2}, \qquad x \neq \pm y,$

13. $\dfrac{xy}{x^2 - y^2}, \qquad x \neq 0, y \neq 0, x \neq \pm y$

14. $\sqrt{2+a}, \qquad a \in (-2, 2)$

15. $\dfrac{2x^2}{x^2 - y^2}, \qquad x \neq \pm y,$

16. $\dfrac{(2-x)(x+1)}{x(x-1)}, \qquad x \neq 0, \pm 1,$

17. $\dfrac{3y - x}{x^2}, \qquad x \neq 0, y, 3y.$

18. $1, \qquad a \neq \pm b$

19. $\dfrac{b^2}{a^2}, \qquad a \neq \pm b, b \neq 0$

20. $x\left(2 + x^2\right)$

21. $\dfrac{a^2}{b^2}, \qquad a \neq \pm b, b \neq 0$

22. $\dfrac{s}{r}, \qquad r \neq \pm s, r \neq 0$

23. $\dfrac{1}{x^3}, \qquad x \neq 0.$

24. $\dfrac{2ab}{a^2 - b^2}, \qquad a \neq \pm b, a \neq 0, b \neq 0,$

25. $\dfrac{a}{b}, \qquad a \neq \pm b, b \neq 0,$