

Bestimmen Sie die Definitions- und Lösungsmengen der Ungleichungen:

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| 1. $\frac{x}{x-2} > \frac{5}{x-2}$                     | 2. $\frac{x+1}{3x} \leq \frac{6}{3x}$                        | 3. $\frac{3}{2x+1} < \frac{4x-1}{2x+1}$                  |
| 4. $\frac{x}{x+6} > \frac{x+1}{x+6}$                   | 5. $\frac{7}{x-3} \leq 2$                                    | 6. $\frac{-3}{2x+5} < -1$                                |
| 7. $\frac{1}{x-4} > \frac{1}{2}$                       | 8. $\frac{5}{6-3x} \leq -\frac{2}{3}$                        | 9. $\frac{2x}{3x-1} < -5$                                |
| 10. $\frac{x+1}{x-1} > 0$                              | 11. $\frac{3-x}{3+x} \leq 3$                                 | 12. $\frac{2x-5}{4+3x} < 12$                             |
| 13. $\frac{5}{1-5x} > \frac{2}{1-2x}$                  | 14. $\frac{2x}{x+1} \leq \frac{4x-1}{2x}$                    | 15. $\frac{x}{x+1} < \frac{x}{x-1}$                      |
| 16. $\frac{5x}{2-x} > \frac{-5x}{2+x}$                 | 17. $\frac{2+3x}{4-2x} \leq \frac{2-3x}{4+2x}$               | 18. $\frac{6x+3}{4x+8} < \frac{3x-1}{2x+4}$              |
| 19. $\frac{3x-8}{x-2} \geq \frac{3x+2}{x+3}$           | 20. $\frac{2x+7}{x+4} + 2 \geq \frac{4x-3}{x-3}$             | 21. $\frac{3x-4}{2x+3} - 5 \leq \frac{10-14x}{4x-4}$     |
| 22. $\frac{3}{x+1} + \frac{1}{x+3} \leq \frac{4}{x+4}$ | 23. $\frac{x+2}{x^2+x-2} \geq \frac{2}{x-1} - \frac{1}{x+2}$ | 24. $\frac{1}{x-2} > \frac{5x-5}{x^2-4} - \frac{4}{x-1}$ |

Lösungen:

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| 1. $D = \mathbb{R} \setminus \{2\}$ $L = \{x \mid x < 2 \vee x > 5\}$                                      | 2. $D = \mathbb{R} \setminus \{0\}$ $L = \{x \mid 0 < x \leq 5\}$   |
| 3. $D = \mathbb{R} \setminus \{-0,5\}$ $L = \{x \mid x < -0,5 \vee x > 1\}$                                | 4. $D = \mathbb{R} \setminus \{-6\}$ $L = \{x \mid x < -6\}$  |
| 5. $D = \mathbb{R} \setminus \{3\}$ $L = \{x \mid x < 3 \vee x \geq 6,5\}$                                 | 6. $D = \mathbb{R} \setminus \{-2,5\}$ $L = \{x \mid -2,5 < x < -1\}$                                     |
| 7. $D = \mathbb{R} \setminus \{4\}$ $L = \{x \mid 4 < x < 6\}$   | 8. $D = \mathbb{R} \setminus \{2\}$ $L = \{x \mid 2 < x \leq 4,5\}$                                       |
| 9. $D = \mathbb{R} \setminus \{\frac{1}{3}\}$ $L = \{x \mid \frac{5}{17} < x < \frac{1}{3}\}$              | 10. $D = \mathbb{R} \setminus \{1\}$ $L = \{x \mid x < -1 \vee x > 1\}$                                   |
| 11. $D = \mathbb{R} \setminus \{-3\}$ $L = \{x \mid x < -3 \vee x \geq -1,5\}$                             | 12. $D = \mathbb{R} \setminus \{-\frac{4}{3}\}$ $L = \{x \mid x < -\frac{53}{34} \vee x > -\frac{4}{3}\}$ |
| 13. $D = \mathbb{R} \setminus \{\frac{1}{5}; \frac{1}{2}\}$ $L = \{x \mid x < 0,2 \vee x > 0,5\}$          | 14. $D = \mathbb{R} \setminus \{-1; 0\}$ $L = \{x \mid -1 < x < 0 \vee x \geq \frac{1}{3}\}$              |
| 15. $D = \mathbb{R} \setminus \{-1; 1\}$ $L = \{x \mid -1 < x < 0 \vee x > 1\}$                            | 16. $D = \mathbb{R} \setminus \{-2; 2\}$ $L = \{x \mid x < -2 \vee 0 < x < 2\}$                           |
| 17. $D = \mathbb{R} \setminus \{-2; 2\}$ $L = \{x \mid -2 < x \leq 0 \vee x > 2\}$                         | 18. $D = \mathbb{R} \setminus \{-2\}$ $L = \{x \mid x < -2\}$   |
| 19. $D = \mathbb{R} \setminus \{-3; 2\}$ $L = \{x \mid -3 < x < 2 \vee x \geq 4\}$                         | 20. $D = \mathbb{R} \setminus \{-4; 3\}$ $L = \{x \mid x < -4 \vee -3,3 \leq x < 3\}$                     |
| 21. $D = \mathbb{R} \setminus \{-1,5; 1\}$ $L = \{x \mid -\frac{3}{2} < x < 1 \vee x \geq \frac{23}{13}\}$ |   |
| 22. $D = \mathbb{R} \setminus \{-4; -3; -1\}$ $L = \{x \mid -4 < x < -3 \vee -2,8 \leq x < -1\}$           |   |
| 23. $D = \mathbb{R} \setminus \{-2; 1\}$ $L = \{x \mid -2 < x < 1\}$                                       | 24. $D = \mathbb{R} \setminus \{-2; 1; 2\}$ $L = \{x \mid x < -2 \vee 1 < x < 2 \vee x > \frac{23}{11}\}$ |