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|---|---|
| 1. $3^{2x-1} = 3^{3x+5}$  | 2. $5^{1-2x} = 5^{3x-9}$  |
| 3. $7^{3x+2} - 7^{2x+3} = 0$  | 4. $6^{5x-1} = 6^{3x+3}$  |
| 5. $2^{2x+1} \cdot 2^{2x+1} = 2^{5x-5}$                                 | 6. $2^{2x+1} + 2^{2x+1} = 2^{5x-7}$   |
| 7. $3^{3x+1} = 3^{2x-1} \cdot 3^{2x-1}$                                 | 8. $3^{3x+1} = 3^{2x-1} + 2 \cdot 3^{2x-1}$   |
| 9. $2 \cdot 5^{3x+3} \cdot 3 \cdot 5^{3x+3} = 5^{4x}$                   | 10. $2 \cdot 5^{3x+3} + 3 \cdot 5^{3x+3} = 5^{4x}$                                      |
| 11. $12 \cdot 3^{2x-3} \cdot 2^{x-3} = 6^{x-1}$                         | 12. $3 \cdot 2^{4x-7} + 2^{4x-7} = 8$   |
| 13. $2^{-x+3} \cdot 5^{2x+12} = 10^{3x+15}$                             | 14. $2^{3x-1} \cdot 3^{x+1} = 12^{2x-2}$  |
| 15. $\frac{2^{2x+2}}{3^{4x-4}} = \frac{2^{3x} \cdot 3^{2x-4}}{3^{x+2}}$ | 16. $\frac{3^{x-2}}{5^{2x-8}} = \frac{5^{3x-7} \cdot 2^{3x-8}}{3^{2x-7} \cdot 2^{x-2}}$ |
| 17. $8^{x+4} \cdot 16^{x+3} = 32^{x+4} \cdot 4$                         | 18. $81^{3x} \cdot 27^{4x+1} \cdot 9^{2x-1} = 3^{5x+1}$                                 |
| 19. $14^{2x+7} \cdot 7^{x-1} = 2^{3x+9}$                                | 20. $6^{-2x} \cdot 2^x = 18^{x+6}$  |
| 21. $\frac{12^{2x-2}}{4^{3x-4}} = 3^{4x-6}$                             | 22. $\frac{54^{2x-11}}{9^{3x-20}} = 6^{x-2}$  |
| 23. $\frac{4^{x+1}}{81^{x-1}} = \frac{8^x \cdot 9^{x-2}}{3^{x+2}}$      | 24. $\frac{5^{x+9}}{10^{2x+13}} = \frac{2^{x+2}}{5^{x+4}}$                              |
| 25. $\frac{7^{2x+4}}{7^{3x+5}} = 5^{x+1}$                               | 26. $\frac{5^{2x+1}}{7^{3x-9}} = 5^{x+4}$   |
| 27. $125^{x+3} \cdot 25^{x+5} = 625^{x-1}$                              | 28. $81^{x+2} \cdot 9^{x-3} = 27^{2x-3}$  |
| 29. $(5^{3x})^2 \cdot (5^4)^{x-2} = (5^{2x})^3$                         | 30. $(3^{6x})^2 \cdot (2^4)^{x-1} = (3^{4x})^3$   |
| 31. $\frac{e^{4x+5}}{e^{6x-2}} = 10^{2x-7}$                             | 32. $\frac{2^{x+6}}{10^{4x+12}} = \frac{4^{2x+8}}{20^{2-x}}$                            |

## Lösungen:

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|-----------------------|-------------|---------------|------------------|
| 1. $x = -6$           | 2. $x = 2$  | 3. $x = 1$    | 4. $x = 2$       |
| 5. $x = 7$            | 6. $x = 3$  | 7. $x = 3$    | 8. $x = -1$      |
| 9. $x = -3,5566\dots$ | 10. $x = 4$ | 11. $x = 1$   | 12. $x = 2$      |
| 13. $x = -3$          | 14. $x = 3$ | 15. $x = 2$   | 16. $x = 3$      |
| 17. $x = -1$          | 18. $x = 0$ | 19. $x = -2$  | 20. $x = -3$     |
| 21. $x = 2$           | 22. $x = 9$ | 23. $x = 2$   | 24. $x = -5$     |
| 25. $x = -1$          | 26. $x = 3$ | 27. $x = -23$ | 28. keine Lösung |
| 29. $x = 2$           | 30. $x = 1$ | 31. $x = 3,5$ | 32. $x = -2$     |