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$$1. \frac{\sqrt{x+1}}{x\sqrt{x+x+\sqrt{x}}} : \frac{1}{x^2-\sqrt{x}}$$

$$2. \left((\sqrt[4]{p} - \sqrt[4]{q})^{-2} + (\sqrt[4]{p} + \sqrt[4]{q})^{-2} \right) : \frac{\sqrt{p+\sqrt{q}}}{p-q}$$

$$3. \frac{\left(\sqrt{a^2+a\sqrt{a^2-b^2}} - \sqrt{a^2-a\sqrt{a^2-b^2}} \right)^2}{2\sqrt{a^3b}} : \left(\sqrt{\frac{a}{b}} + \sqrt{\frac{b}{a}} - 2 \right); \quad a > b > 0$$

$$4. \left(\frac{(a+b)^{-n/4} \cdot c^{1/2}}{a^2-nb^{-3/4}} \right)^{4/3} : \left(\frac{b^3c^4}{(a+b)^{2n}a^{16-8n}} \right)^{1/6}; \quad b = 0,04$$

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

$$6. \frac{(\sqrt{a}+\sqrt{b})^2-4b}{(a-b)\left(\sqrt{\frac{1}{b}}+3\sqrt{\frac{1}{a}}\right)} : \frac{a+9b+6\sqrt{ab}}{\frac{a}{\sqrt{b}}+\frac{1}{\sqrt{a}}}$$

$$7. \frac{(\sqrt[4]{m}+\sqrt[4]{n})^2+(\sqrt[4]{m}-\sqrt[4]{n})^2}{2(m-n)} : \frac{1}{\sqrt{m^3-\sqrt{n^3}}} - 3\sqrt{mn}$$

$$8. \left(\left(\frac{2^{3/2}+27y^{3/5}}{\sqrt{2+3\sqrt[3]{y}}} + 3 \sqrt[10]{32y^2} - 2 \right) \cdot 3^{-2} \right)^5$$

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

$$10. t \cdot \frac{1+\frac{2}{\sqrt{t+4}}}{2-\sqrt{t+4}} + \sqrt{t+4} + \frac{4}{\sqrt{t+4}}$$

$$11. \left(\frac{1+\sqrt{x}}{\sqrt{1+x}} - \frac{\sqrt{1+x}}{1+\sqrt{x}} \right)^2 - \left(\frac{1-\sqrt{x}}{\sqrt{1+x}} - \frac{\sqrt{1+x}}{1-\sqrt{x}} \right)^2$$

$$12. \frac{x-1}{x+x^{1/2}+1} : \frac{x^{0,5}+1}{x^{1,5}-1} + \frac{2}{x^{-0,5}}$$

$$13. \left(\frac{1}{\sqrt{a}+\sqrt{a+1}} + \frac{1}{\sqrt{a}-\sqrt{a-1}} \right) : \left(1 + \sqrt{\frac{a+1}{a-1}} \right)$$

$$14. \frac{x-y}{x^{3/4}+x^{1/2}y^{1/4}} \cdot \frac{x^{1/2}y^{1/4}+x^{1/4}y^{1/2}}{x^{1/2}+y^{1/2}} \cdot \frac{x^{1/4}y^{-1/4}}{x^{1/2}-2x^{1/4}y^{1/4}+y^{1/2}}$$

$$15. \sqrt[n]{y^{\frac{2n}{m-n}}} : \sqrt[m]{y^{\frac{(m-n)^2+4mn}{m^2-n^2}}}$$

$$16. \left(\frac{(z^{2/p}+z^{2/q})^2-4z^{2/p+2/q}}{(z^{1/p}-z^{1/q})^2+4z^{1/p+1/q}} \right)^{1/2}$$

$$17. \frac{x-1}{x^{3/4}+x^{1/2}} \cdot \frac{x^{1/2}+x^{1/4}}{x^{1/2}+1} \cdot x^{1/4} + 1$$

$$18. \left(\frac{1+x+x^2}{2x+x^2} + 2 - \frac{1-x+x^2}{2x-x^2} \right)^{-1} \cdot (5 - 2x^2); \quad x = \sqrt{3,92}$$

19. $\frac{(x^2-y^2)(\sqrt[3]{x}+\sqrt[3]{y})}{\sqrt[3]{x^5}+\sqrt[3]{x^2y^3}-\sqrt[3]{x^3y^2}-\sqrt[3]{y^5}} - (\sqrt[3]{xy} + \sqrt[3]{y^2}); \quad x = 64$
20. $\sqrt{\frac{2a}{(1+a)\sqrt[3]{1+a}}} \cdot \sqrt[3]{\frac{4+\frac{8}{a}+\frac{4}{a^2}}{\sqrt{2}}}$
21. $\frac{4x(x+\sqrt{x^2-1})^2}{(x+\sqrt{x^2-1})^4-1}$
22. $\frac{\sqrt{(x+2)^2-8x}}{\sqrt{x-\frac{2}{\sqrt{x}}}}$
23. $\sqrt[4]{6x(5+2\sqrt{6})} \cdot \sqrt{3\sqrt{2x}-2\sqrt{3x}}$
24. $\sqrt[6]{4x(11+4\sqrt{6})} \cdot \sqrt[3]{4\sqrt{2x}-2\sqrt{3x}}$
25. $\frac{a^3-a-2b-\frac{b^2}{a}}{(1-\sqrt{\frac{1}{a}+\frac{b}{a^2}})(a+\sqrt{a+b})} : \left(\frac{a^3+a^2+ab+a^2b}{a^2-b^2} + \frac{b}{a-b} \right); \quad a = 23, b = 22$
26. $\frac{(\sqrt[5]{a^4/3})^{3/2}}{(\sqrt[5]{a^4})^3} \cdot \frac{(\sqrt{a^3\sqrt{a^2b}})^4}{(\sqrt[4]{a\sqrt{b}})^6}$
27. $\frac{\sqrt[3]{x+\sqrt{2-x^2}} \cdot \sqrt[6]{1-x\sqrt{2-x^2}}}{\sqrt[3]{1-x^2}}$
28. $\frac{x(x^2-a^2)^{-1/2}+1}{a(x-a)^{-1/2}+(x-a)^{1/2}} : \frac{a^2\sqrt{x+a}}{x-(x^2-a^2)^{1/2}} + \frac{1}{x^2-ax}$
29. $\frac{\left(\sqrt[3]{(r^2+4)} \cdot \sqrt{1+\frac{4}{r^2}} - \sqrt[3]{(r^2-4)} \sqrt{1-\frac{4}{r^2}} \right)^2}{r^2-\sqrt{r^4-16}}$
30. $\sqrt{\frac{\sqrt{2}}{a} + \frac{a}{\sqrt{2}}} + 2 - \frac{a^2\sqrt[4]{2}-2\sqrt{a}}{a\sqrt{2a}-\sqrt[4]{8a^4}}$
31. $\left(\frac{\sqrt[4]{a^3-1}}{\sqrt[4]{a-1}} + \sqrt[4]{a} \right)^{1/2} \cdot \left(\frac{\sqrt[4]{a^3+1}}{\sqrt[4]{a+1}} - \sqrt{a} \right) \cdot \left(a - \sqrt{a^3} \right)^{-1}$
32. $\frac{\sqrt{\frac{abc+4}{a}+4\sqrt{\frac{bc}{a}}}}{\sqrt{abc+2}}; \quad a = 0, 04$
33. $\frac{\sqrt{(2p+1)^3}+\sqrt{(2p-1)^3}}{\sqrt{4p+2}\sqrt{4p^2-1}}$
34. $1 - \frac{\frac{1}{\sqrt{a-1}}-\sqrt{a+1}}{\frac{1}{\sqrt{a+1}}-\sqrt{a-1}} : \frac{\sqrt{a+1}\cdot\sqrt{a^2-1}}{(a-1)\sqrt{a+1}-(a+1)\sqrt{a-1}}$
35. $\left(\frac{a+2}{\sqrt{2a}} - \frac{a}{\sqrt{2a+2}} + \frac{2}{a-\sqrt{2a}} \right) \cdot \frac{\sqrt{a}-\sqrt{2}}{a+2}$

36. $\left(\sqrt[4]{36mn^2p} + m\sqrt{\frac{3n}{m}} + \sqrt{3np}\right) \cdot \left(\sqrt[4]{36mn^2p} - \sqrt{3mn} - p\sqrt{\frac{3n}{p}}\right)$
37. $\frac{1-x^{-2}}{x^{1/2}-x^{-1/2}} - \frac{2}{x^{3/2}} + \frac{x^{-2}-x}{x^{1/2}-x^{-1/2}}$
38. $\left(\frac{\sqrt{a}}{2} - \frac{1}{2\sqrt{a}}\right)^2 \cdot \left(\frac{\sqrt{a}-1}{\sqrt{a}+1} - \frac{\sqrt{a}+1}{\sqrt{a}-1}\right)$
39. $\frac{9b^{4/3} - \frac{a^{3/2}}{b^2}}{\sqrt{a^{3/2}b^{-2} + 6a^{3/4}b^{-1/3} + 9b^{4/3}}} \cdot \frac{b^2}{a^{3/4} - 3b^{5/3}}; \quad b = 4$
40. $\frac{\frac{1}{a} - \frac{1}{b+c}}{\frac{1}{a} + \frac{1}{b+c}} \cdot \left(1 + \frac{b^2+c^2-a^2}{2bc}\right) : \frac{a-b-c}{abc} \quad a = 0,02, b = -11,05, c = 1,07$
41. $\frac{1}{2(1+\sqrt{a})} + \frac{1}{2(1-\sqrt{a})} - \frac{a^2+2}{1-a^3}$
42. $\frac{\sqrt{2}(x-a)}{2x-a} - \left(\left(\frac{\sqrt{x}}{\sqrt{2x+\sqrt{a}}}\right)^2 + \left(\frac{\sqrt{2x+\sqrt{a}}}{2\sqrt{a}}\right)^{-1}\right)^{1/2}; \quad a = 0,32, x = 0,08$
43. $\frac{\left(m^2 - \frac{1}{n^2}\right)^m \cdot \left(n + \frac{1}{m}\right)^{n-m}}{\left(n^2 - \frac{1}{m^2}\right)^n \cdot \left(m - \frac{1}{n}\right)^{m-n}}$
44. $\left(\frac{\sqrt{x-a}}{\sqrt{x+a} + \sqrt{x-a}} + \frac{x-a}{\sqrt{x^2-a^2-x+a}}\right) : \sqrt{\frac{x^2}{a^2} - 1}; \quad x > a > 0$
45. $\left(\frac{\sqrt[4]{x^3} - \sqrt[4]{x}}{1-\sqrt{x}} + \frac{1+\sqrt{x}}{\sqrt[4]{x}}\right)^2 \cdot \left(1 + \frac{2}{\sqrt{x}} + \frac{1}{x}\right)^{-1/2}$
46. $\frac{\sqrt{1-x^2}-1}{x} \cdot \left(\frac{1-x}{\sqrt{1-x^2+x-1}} + \frac{\sqrt{1+x}}{\sqrt{1+x}-\sqrt{1-x}}\right)$
47. $\frac{\frac{a-b}{2a-b} - \frac{a^2+b^2+a}{2a^2+ab-b^2}}{(4b^4+4ab^2+a^2):(2b^2+a)} \cdot (b^2 + b + ab + a)$
48. $\frac{(2p-q)^2+2q^2-3pq}{2p^{-1}+q^2} : \frac{4p^2-3pq}{2+pq^2}; \quad p = 78, q = 7/25$
49. $\left(\frac{pq^3}{(p+q)^{5/2}} - \frac{2pq^2}{(p+q)^{3/2}} + \frac{pq}{\sqrt{p+q}}\right) : \left(\frac{p^2}{(p+q)^{5/2}} - \frac{p^2q}{(p+q)^{7/2}}\right)$
50. $\frac{2(x^4+4x^2-12)+x^4+11x^2+30}{x^2+6}$

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| 1. $x - 1$ | 2. $2(\sqrt{p} + \sqrt{q})^2 / (p - q)$ | 3. $(\sqrt{a} + \sqrt{b})^2 / (a - b)$ |
| 4. 0, 2 | 5. 0 | 6. $1/(ab)$ |
| 7. y^2 | 8. $(t + 1)/t$ | 9. -4 |
| 10. $16x\sqrt{x}/(1 - x^2)(x - 1)$ | 11. $16x\sqrt{x}/(1 - x^2)(x - 1)$ | 12. $16x\sqrt{x}/(1 - x^2)(x - 1)$ |
| 13. $x + 1$ | 14. $\sqrt{a - 1}$ | 15. $\sqrt[m]{y}$ |
| 16. $ z^{1/p} - z^{1/q} $ | 17. \sqrt{x} | 18. $(\sqrt[4]{x} + \sqrt[4]{y}) / (\sqrt[4]{x} - \sqrt[4]{y})$ |
| 19. $\sqrt[6]{a^5}/a$ | 20. $1/\sqrt{x^2 - 1}$ | 21. $-\sqrt{x}$ pro $x \in (0; 2]$; \sqrt{x} pro $x \in (2; \infty)$ |
| 22. $\sqrt{6x}$ | 23. $\sqrt[3]{20x}$ | 24. 1 |
| 25. $1/\sqrt[12]{a^2b}$ | 26. $\sqrt[6]{2}$ | 27. $\sqrt[6]{2}$ |
| 28. $2/(x^2 - a^2)$ | 29. $2\sqrt[3]{r}/r$ | 30. -1 |
| 31. $1/a$ | 32. 5 | 33. $4p - \sqrt{4p^2 - 1}$ |
| 34. $\sqrt{a^2 - 1}$ | 35. $1/(\sqrt{a} + \sqrt{2})$ | 36. $-3n(m + p)$ |
| 37. $-\sqrt{x}(1 + \frac{2}{x^2})$ | 38. $(1 - a)/\sqrt{a}$ | 39. -4 |
| 40. 0, 1 | 41. $-1/(a^2 + a + 1)$ | 42. 1 |
| 43. $(m/n)^{m+n}$ | 44. 1 | 45. $(1 - \sqrt{x})/(1 - x)$ |
| 46. -1 | 47. $(b + 1)/(b - 2a)$ | 48. 0, 5 |
| 49. $q(p + q)$ | 50. $1 + 3x^2$ | |