Vereinfachen Sie:

1. $\frac{1}{\ln(e^{kx})} = \frac{1}{kx}$
2. $\frac{(a+i)(a-i)}{a^2-i^2} = \frac{a^2-i^2}{a^2-i^2}$
3. $\frac{1}{\frac{\frac{1}{2}}{\frac{2}{3}}} \cdot \frac{a^2}{\sqrt{\ln\sqrt{q}}}$
4. $\frac{(a+b)^2 \cdot (a-b)^2 \cdot (a^2-b^2)}{\frac{q^2-1}{(q+1)\cdot(q-1)}}$
5. $\frac{2}{\frac{1}{2}\cdot\frac{2}{3}}$
6. $\frac{2}{\frac{3}{\frac{\frac{1}{2}}{\frac{2}{3}}}}$
7. $\frac{\ln\sqrt{\frac{3}{2}}}{e^{\ln\frac{2}{3}}}$
8. $\frac{\log\frac{1}{2}}{\log 2}$
9. $\frac{j+1}{j-1\cdot(j^2-1)}$
10. $(k-1)\frac{\sin^2\alpha+\cos^2\alpha}{k^2-1}$
11. $\frac{k}{\frac{2}{k}} - 2 + \frac{q^2}{2}\cdot\frac{\sqrt{4}}{3}$
12. $x^{\frac{1}{3}} = 8$
13. $x^2 + 5x + 7 = 0$
14. $\frac{18}{4} - 2x + 3x^2 = 3$
15. $\frac{11}{121} + \frac{9}{3} = x$

16. $x^4 + 3x^2 = 2$

17. $\dfrac{18}{3} + \dfrac{36}{6} + 7 = x$

18. $q^2 + 1 = x \cdot (q+1) \cdot (q-1)$

(a) $(2x+3)(2x-3)^2$

(b) für alle $x > 0$: $\log_x 1 = 0$

(c) $\sin \pi = 0$

(d) $\dfrac{a}{2x} \pm \dfrac{x}{10y}$

(e) $\dfrac{\sqrt{x}}{6x} \div \dfrac{2x^2}{3a}$

(f) $\dfrac{1}{1 + \dfrac{1}{2 + \dfrac{1}{3 + \dfrac{1}{4}}}}$

(g) $-\sqrt[3]{(-1)^3}$

(h) $\dfrac{(-1)^{\frac{2}{3}}}{\sqrt[5]{-1}}$

(i) $\log_2^{-1}$

(j) $\tan \dfrac{\pi}{4}$

(k) $\log_{10} \sqrt[10]{10}$

(l) $\sum_{i=1}^{n} i$

(m) $\ln e^2 + \ln \dfrac{1}{e^2}$

(n) $(\sqrt{x-1})^2$