Löse die Gleichungen nach k auf:

a) $\frac{1}{k} - \frac{1}{2} \cdot \frac{1}{k} = 2$

b) $2 - \sqrt{\frac{k}{4}} = \sqrt{\frac{k}{4}}, \quad k > 0$

c) $\sqrt{1 + k^2 + 16} = 9$

d) $2^k + 2^{k+1} = 1$

e) $2e^{-k} - e^{-2k} = 0$

f) $\ln k + \ln(2k) = 2, \quad k > 0$

g) $(k+1)^2 = a, \quad a > 0$

h) $\frac{1}{k} + \frac{1}{k^2} = 2$

i) $k^4 - 4k^2 = 0$

j) $x^3 = 4x$

k) $x^4 - x^2 - 12 = 0$

l) $3 - e^x = \frac{2}{e^x}$

m) $ae^{-3x} - be^{-2x} = 0, \quad a, b > 0$ Ergebnis ohne Minus-Zeichen

n) $\frac{1}{5} - 4\left(x - \frac{1}{5}\right) = 1$ Die 2. Zeile soll keinen Bruch enthalten.

Löse die Gleichungen nach k auf:

a) $\frac{1}{k} - \frac{1}{2} \cdot \frac{1}{k} = 2$ $\qquad k = \frac{1}{4}$

b) $2 - \sqrt{\frac{k}{4}} = \sqrt{\frac{k}{4}}, \quad k > 0$ $\qquad k = 4$

c) $\sqrt{1 + k^2 + 16} = 9$ $\qquad k_{1/2} = \pm 8$

d) $2^k + 2^{k+1} = 1$ $\qquad k = -\frac{\ln 3}{\ln 2}$

e) $2e^{-k} - e^{-2k} = 0$ $\qquad k = -\ln 2$

f) $\ln k + \ln(2k) = 2, \quad k > 0$ $\qquad k = \frac{e}{\sqrt{2}}$

g) $(k+1)^2 = a, \quad a > 0$ $\qquad k_{1/2} = -1 \pm \sqrt{a}$

h) $\frac{1}{k} + \frac{1}{k^2} = 2$ $\qquad k_1 = 1,\ k_2 = -\frac{1}{2}$

i) $k^4 - 4k^2 = 0$ $\qquad k_1 = 0,\ k_{2/3} = \pm 2$

j) $x^3 = 4x$ $\qquad x_1 = 0,\ x_{2/3} = \pm 2$

k) $x^4 - x^2 - 12 = 0$ $\qquad u = x^2,\ u^2 - u - 12 = 0,\ u_1 = 4,\ u_2 = -3,\ x_{1/2} = \pm 2$

l) $3 - e^x = \frac{2}{e^x}$ $\qquad u = e^x,\ u^2 - 3u + 2 = 0,\ u_1 = 1,\ u_2 = 2, x_1 = 0,\ x_2 = \ln 2$

m) $ae^{-3x} - be^{-2x} = 0, \quad a, b > 0$ $\qquad x = \ln \frac{a}{b}$

n) $\frac{1}{5} - 4\left(x - \frac{1}{5}\right) = 1 \quad | \cdot 5$ $\qquad x = 0$

Umstellen von Formeln

a) $s = \frac{1}{2} a t^2 \ \ (t \geq 0), \quad t = ?$

b) $V = \frac{1}{3} \pi r^2 h, \quad h = ?$

c) $U = \frac{D + d}{2} \pi, \quad d = ?$

d) $f = \frac{1}{2\pi\sqrt{LC}}, \quad L = ?$

e) $A = \frac{\pi}{4} (D^2 - d^2) \ \ (d \geq 0), \quad d = ?$

f) $y = a e^{-kt}, \quad t = ?$

g) $y = \frac{a}{b + e^{-kx}}, \quad k = ?$

h) $b = \frac{2^{a+x}}{2^{a-x}}, \quad x = ?$

Umstellen von Formeln

a) $s = \frac{1}{2} a t^2 \quad (t \geq 0)$ $\qquad t = \sqrt{\frac{2s}{a}}$

b) $V = \frac{1}{3} \pi r^2 h$ $\qquad h = \frac{3V}{\pi r^2}$

c) $U = \frac{D+d}{2} \pi$ $\qquad d = \frac{2U}{\pi} - D = \frac{2U - \pi D}{\pi}$

d) $f = \frac{1}{2\pi\sqrt{LC}}$ $\qquad L = \frac{1}{4Cf^2\pi^2}$

e) $A = \frac{\pi}{4}(D^2 - d^2) \quad (d \geq 0)$ $\qquad d = \sqrt{D^2 - \frac{4A}{\pi}}$

f) $y = a\,e^{-kt}$ $\qquad t = -\frac{1}{k} \ln \frac{y}{a} = \frac{1}{k} \ln \frac{a}{y}$

g) $y = \frac{a}{b + e^{-kx}}$ $\qquad k = -\frac{1}{x} \ln \frac{a - by}{y} = \frac{1}{x} \ln \frac{y}{a - by}$

h) $b = \frac{2^{a+x}}{2^{a-x}}$ $\qquad x = \frac{1}{2} \frac{\ln b}{\ln 2}$