

Ćwiczenia 10

1. Wykonaj obliczenia (w brakujące zmienne podstaw dowolne liczby by miało to sens):

(a) $\log_2 32$,

(b) $\log_3 \frac{1}{81}$,

(c) $\log_4 8$,

(d) $\log_3 \frac{3}{5} + \log_9 \frac{25}{9}$,

(e) $\log_4 \frac{a^5 b^9}{c^6}$,

(f) $\log_3 \sqrt{2\sqrt{8\sqrt{20}}}$,

(g) $\log\left(\sqrt[3]{\frac{1}{a^2}} \cdot \sqrt[4]{\frac{1}{b^2}}\right)$,

(h) $10^{-\log 8}$,

(i) $10^{1-\log 2}$,

(j) $\log_{\sqrt[3]{5}} 7 \cdot \log_{\sqrt{7}} 125$,

(k) $\log_2 12 \cdot \log_{12} 22 \cdot \log_{22} 32$.

2. Wykonaj obliczenia:

(a) $\left[4^{-\frac{1}{4}} + \left(\frac{1}{2^{-\frac{3}{2}}}\right)^{-\frac{4}{3}}\right] \cdot \left[4^{-\frac{1}{4}} + (2\sqrt{2})^{-\frac{4}{3}}\right]$,

(b) $\left[9^{-\frac{1}{4}} + (3\sqrt{3})^{-\frac{4}{3}}\right] \cdot \left[9^{-\frac{1}{4}} - (3\sqrt{3})^{-\frac{4}{3}}\right]$,

(c) $\left[\left(4 + 7^{\frac{1}{2}}\right)^{\frac{1}{2}} + \left(4 - 7^{\frac{1}{2}}\right)^{\frac{1}{2}}\right]^2$,

(d) $\left[12^{\frac{5}{8}} + \left(\frac{1}{3}\right)^{-2} \cdot \left(2 \cdot 3^{-1} - 9^{-\frac{1}{2}}\right)\right]^{\frac{1}{3}}$,

(e) $\left[\left(3 - 5^{\frac{1}{2}}\right)^{\frac{1}{2}} - \left(3 + 5^{\frac{1}{2}}\right)^{\frac{1}{2}}\right]^2$,

(f) $\left[3 \cdot 2^{\frac{2}{3}} - \frac{2}{3} \left(2^{\frac{5}{3}} - 2^{-\frac{1}{3}}\right)\right] : 16^{\frac{5}{3}}$.

3. Oblicz:

a) $\sin 0^\circ$

b) $\sin 30^\circ$

c) $\sin 34^\circ$

d) $\cos 0^\circ$

e) $\cos -35^\circ$

f) $\sin 0$

g) $\sin 30$

h) $\sin \frac{\pi}{4}$

i) $\cos 2\frac{1}{4}$

j) $\cos -\frac{\pi}{6}$

4. Oblicz:

- (a) $\arcsin \frac{-\sqrt{3}}{2}$, (b) $\arccos \frac{\sqrt{2}}{2}$,
 (c) $\operatorname{arctg} 1$, (d) $\operatorname{arcctg}(-\sqrt{3})$,
 (e) $\arcsin \frac{1}{2}$, (f) $\arcsin \frac{-\sqrt{3}}{3}$,
 (g) $\arcsin(\sin \frac{\pi}{3})$, (h) $\arcsin(\sin \frac{2\pi}{3})$,
 (i) $\sin(\arcsin \frac{1}{2})$, (j) $\sin(\arcsin \frac{3}{2})$,
 (k) $\sin \left(\operatorname{arctg} \sqrt{3} + \arccos(-\frac{1}{2}) \right)$, (l) $\cos \left(2 \operatorname{arctg}(-1) + 3 \arcsin \frac{\sqrt{2}}{2} \right)$.

5. Oblicz:

a)

$$2^{\sin(5)} + 3^{\operatorname{tg}(5)}$$

b) oblicz r ze wzoru

$$r = \frac{3 \cdot V}{S_A + S_B + S_C + S_D}$$

c) oblicz F_w ze wzoru

$$F_w = d \cdot g \cdot V$$

gdzie $d = 11$, $g = 34$, $V = 23$.