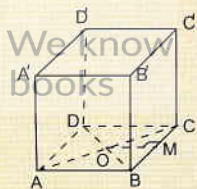


d) Cubul

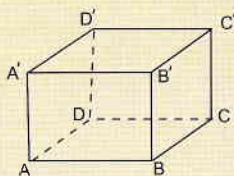
$$\begin{cases} OM = a_b = r = \frac{l}{2} \\ AO = R = \frac{l\sqrt{2}}{2} \\ AC = d_b = l\sqrt{2} \end{cases}$$



$$\begin{cases} P_b = 4l \\ A_b = l^2 \end{cases} \begin{cases} A_l = 4l^2 \\ A_t = 6l^2 \\ V = l^3 \end{cases}$$

e) Paralelipipedul dreptunghic

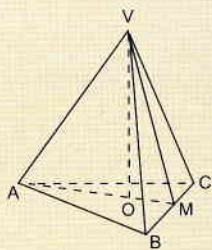
$$\begin{cases} P_b = 2(l+L) \\ A_b = l \cdot L \end{cases} \begin{cases} A_l = 2h(l+L) \\ A_t = 2(lL + lh + Lh) \\ V = l \cdot L \cdot h \end{cases}$$



2) PIRAMIDA

a) Piramida triunghiulară regulată

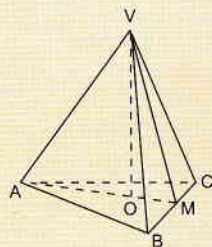
$$\begin{cases} OM = a_b = r = \frac{l\sqrt{3}}{6} \\ AO = R = \frac{l\sqrt{3}}{3} \\ AM = h_{\Delta ech} = \frac{l\sqrt{3}}{2} \end{cases}$$



$$\begin{cases} P_b = 3l \\ A_b = \frac{l^2\sqrt{3}}{4} \end{cases} \begin{cases} A_l = \frac{a_p \cdot P_b}{2} \\ A_t = A_l + A_b \\ V = \frac{h \cdot A_b}{3} \end{cases}$$

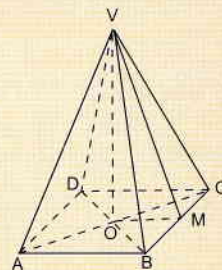
b) Tetraedrul regulat - este piramida care are toate muchiile congruente.

$$\begin{cases} P_b = 3l \\ A_b = \frac{l^2\sqrt{3}}{4} \end{cases} \begin{cases} A_l = \frac{3l^2\sqrt{3}}{4} \\ A_t = l^2\sqrt{3} \\ V = \frac{h \cdot A_b}{3} \end{cases}$$



c) Piramida patrulateră regulată

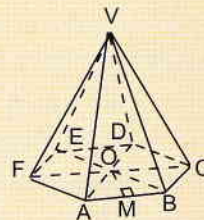
$$\begin{cases} OM = a_b = r = \frac{l}{2} \\ AO = R = \frac{l\sqrt{2}}{2} \\ AC = l\sqrt{2} \end{cases}$$



$$\begin{cases} P_b = 4l \\ A_b = l^2 \end{cases} \begin{cases} A_l = \frac{a_p \cdot P_b}{2} \\ A_t = A_l + A_b \\ V = \frac{h \cdot A_b}{3} \end{cases}$$

d) Piramida hexagonală regulată

$$\begin{cases} OM = a_b = r = \frac{l\sqrt{3}}{2} \\ AO = R = l \\ AC = d_b = 2l \end{cases}$$

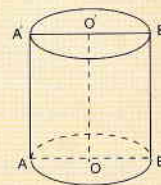


$$\begin{cases} P_b = 6l \\ A_b = \frac{3l^2\sqrt{3}}{2} \end{cases} \begin{cases} A_l = \frac{a_p \cdot P_b}{2} \\ A_t = A_l + A_b \\ V = \frac{h \cdot A_b}{3} \end{cases}$$

3) CORPURI ROTUNDE

a) Cilindrul circular drept

$$\begin{cases} A_l = 2\pi RG \\ A_t = 2\pi R(R+G) \\ V = \pi R^2 h \end{cases}$$



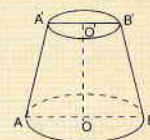
b) Conul circular drept

$$\begin{cases} A_l = \pi RG \\ A_t = \pi R(R+G) \\ V = \frac{\pi R^2 h}{3} \end{cases}$$



c) Trunchiul de con circular drept

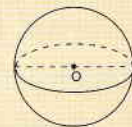
$$\begin{cases} A_l = \pi G(r+R) \\ A_t = A_l + A_b + A_B \\ V = \frac{\pi h}{3}(R^2 + r^2 + R \cdot r) \end{cases}$$



$$\begin{cases} A_b = \pi r^2 \\ A_B = \pi R^2 \end{cases}$$

d) Sfera

$$\begin{cases} A = 4\pi R^2 \\ V = \frac{4\pi R^3}{3} \end{cases}$$



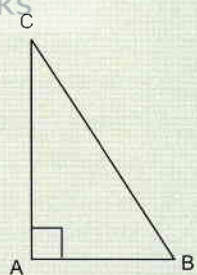
$m(\hat{A}) = 90^\circ \Rightarrow AB, AC = \text{catete}; BC = \text{ipotenuză}$

$$\sin \angle = \frac{\text{cateta opusă} \angle}{\text{ipotenuză}}$$

$$\cos \angle = \frac{\text{cateta alăturată} \angle}{\text{ipotenuză}}$$

$$\text{tg} \angle = \frac{\text{cateta opusă} \angle}{\text{cateta alăturată} \angle}$$

$$\text{ctg} \angle = \frac{\text{cateta alăturată} \angle}{\text{cateta opusă} \angle}$$



În triunghiul de mai sus avem:

$$\sin B = \frac{AC}{BC} \quad \sin C = \frac{AB}{BC}$$

$$\cos B = \frac{AB}{BC} \quad \cos C = \frac{AC}{BC}$$

$$\text{tg} B = \frac{AC}{AB} \quad \text{tg} C = \frac{AB}{AC}$$

$$\text{ctg} B = \frac{AB}{AC} \quad \text{ctg} C = \frac{AC}{AB}$$

	0°	$30^\circ = \frac{\pi}{6}$	$45^\circ = \frac{\pi}{4}$	$60^\circ = \frac{\pi}{3}$	$90^\circ = \frac{\pi}{2}$
sin	$\frac{\sqrt{0}}{2} = 0$	$\frac{\sqrt{1}}{2} = \frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{4}}{2} = 1$
cos	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
tg	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	nu există
ctg	nu există	$\sqrt{3}$	1	$\frac{1}{\sqrt{3}}$	0

Ecuția fundamentală a trigonometriei:

$$\sin^2 a + \cos^2 a = 1, \forall a \in \mathbb{R}$$

Valoarea tangentei unui unghi se mai poate calcula folosind

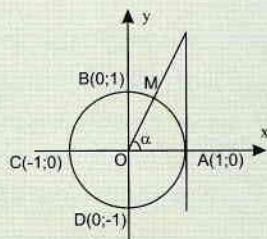
formula $\text{tg} a = \frac{\sin a}{\cos a}$; de asemenea $\text{ctg} a = \frac{1}{\text{tg} a}$.

Cercul trigonometric

Este cercul care are centrul în originea axelor de coordonate și raza egală cu 1.

Dacă $M(x; y) \in$ cercului trigonometric (ca în figura alăturată)

$$\text{atunci} \begin{cases} x = \cos \alpha \\ y = \sin \alpha \end{cases}$$



①

$$\begin{cases} \sin\left(\frac{\pi}{2} - a\right) = \cos a \\ \cos\left(\frac{\pi}{2} - a\right) = \sin a \\ \text{tg}\left(\frac{\pi}{2} - a\right) = \text{ctg} a \\ \text{ctg}\left(\frac{\pi}{2} - a\right) = \text{tg} a \end{cases}$$

②

$$\begin{cases} \sin(a+b) = \sin a \cos b + \sin b \cos a \\ \sin(a-b) = \sin a \cos b - \sin b \cos a \\ \cos(a+b) = \cos a \cos b - \sin a \sin b \\ \cos(a-b) = \cos a \cos b + \sin a \sin b \\ \text{tg}(a+b) = \frac{\text{tga} + \text{tgb}}{1 - \text{tgatgb}} \\ \text{tg}(a-b) = \frac{\text{tga} - \text{tgb}}{1 + \text{tgatgb}} \end{cases}$$

③

$$\begin{cases} \sin 2a = 2 \sin a \cos a \\ \cos 2a = \cos^2 a - \sin^2 a \\ \cos 2a = 2 \cos^2 a - 1 \\ \cos 2a = 1 - 2 \sin^2 a \\ \text{tg} 2a = \frac{2 \text{tga}}{1 - \text{tg}^2 a} \end{cases}$$

④

$$\begin{cases} \sin \frac{a}{2} = \pm \sqrt{\frac{1 - \cos a}{2}} \\ \cos \frac{a}{2} = \pm \sqrt{\frac{1 + \cos a}{2}} \\ \text{tg} \frac{a}{2} = \pm \sqrt{\frac{1 - \cos a}{1 + \cos a}} \end{cases}$$

⑤

$$\begin{cases} \sin 3a = 3 \sin a - 4 \sin^3 a \\ \cos 3a = 4 \cos^3 a - 3 \cos a \end{cases}$$

⑥

$$\begin{cases} \sin a + \sin b = 2 \sin \frac{a+b}{2} \cos \frac{a-b}{2} \\ \sin a - \sin b = 2 \cos \frac{a+b}{2} \sin \frac{a-b}{2} \\ \cos a + \cos b = 2 \cos \frac{a+b}{2} \cos \frac{a-b}{2} \\ \cos a - \cos b = -2 \sin \frac{a+b}{2} \sin \frac{a-b}{2} \end{cases}$$

⑦

$$\begin{cases} \sin a \cos b = \frac{\sin(a+b) + \sin(a-b)}{2} \\ \cos a \cos b = \frac{\cos(a+b) + \cos(a-b)}{2} \\ \sin a \sin b = \frac{\cos(a-b) - \cos(a+b)}{2} \end{cases}$$

⑧

$$\text{tg} a \pm \text{tgb} = \frac{\sin(a \pm b)}{\cos a \cos b}$$