

Fig. 1

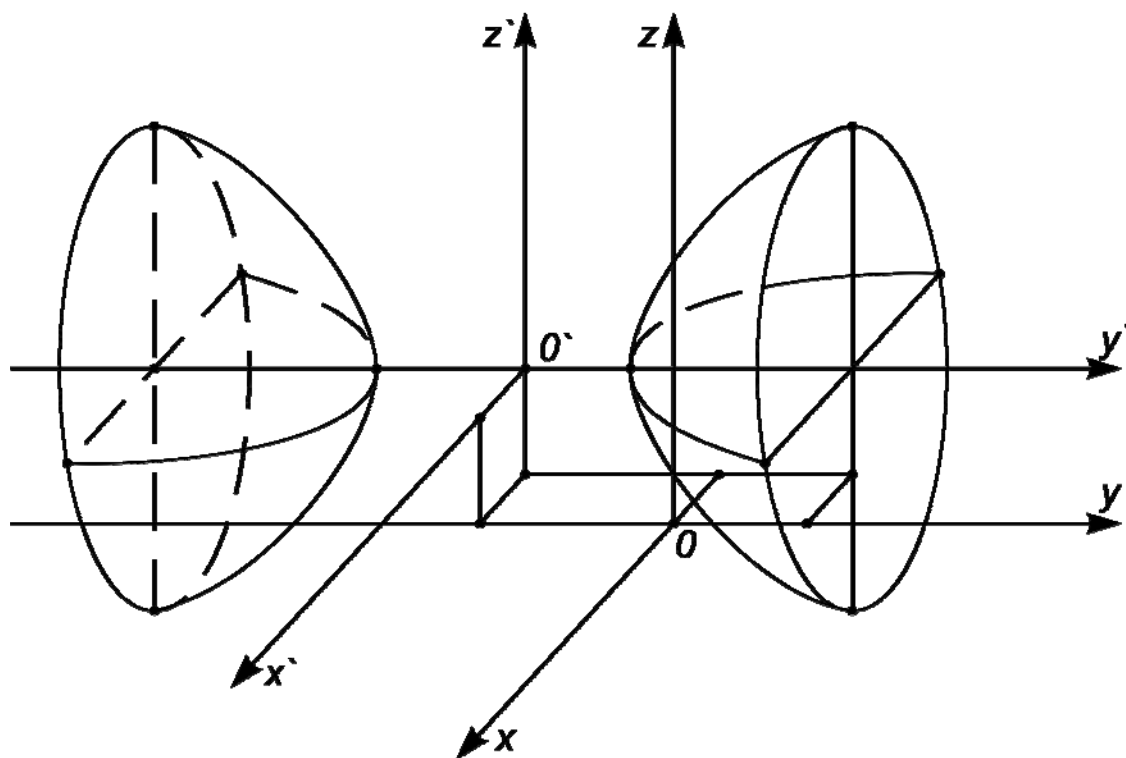
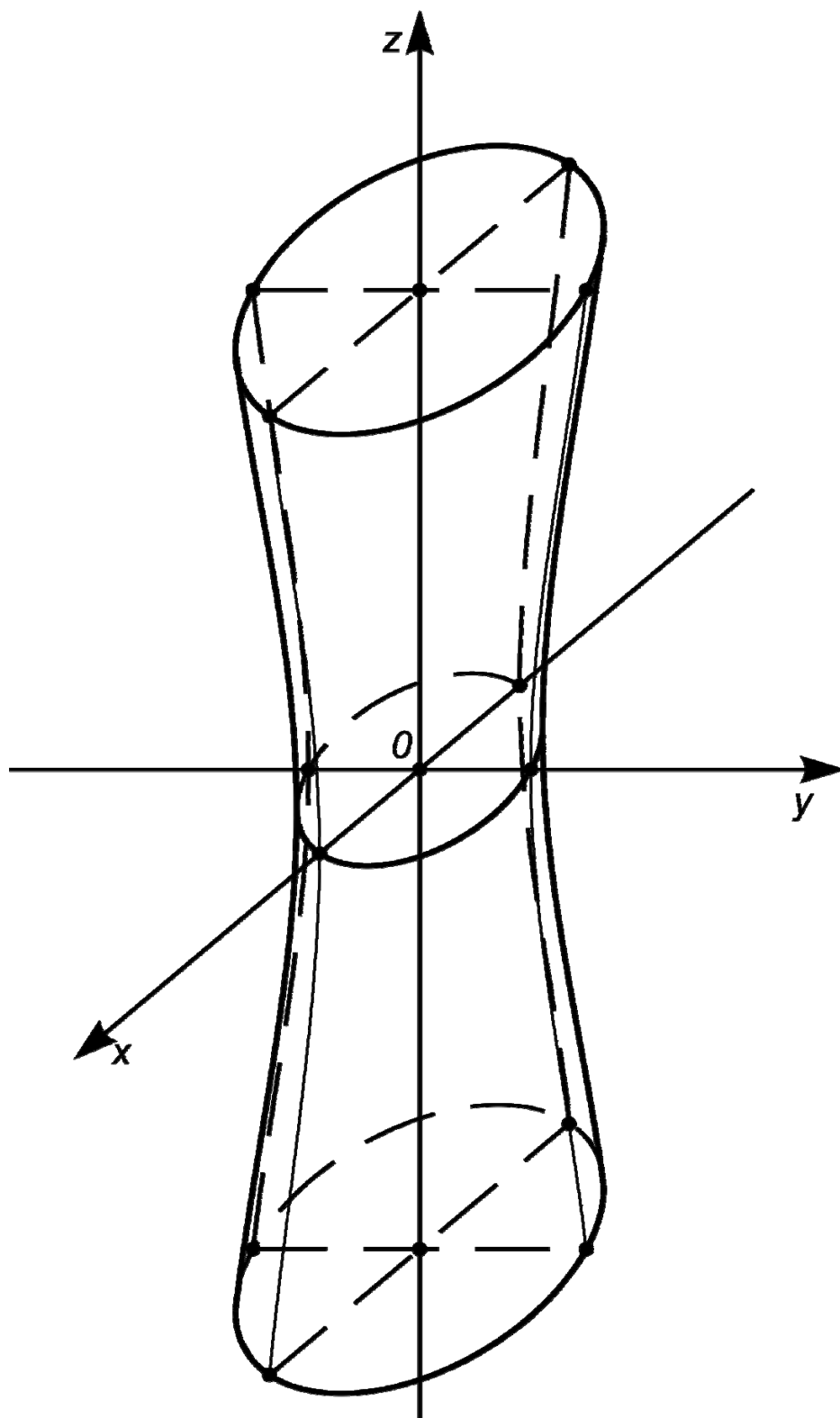


Fig. 2

*Fig. 3.*

Suprafețe de ordinul doi

$$Ax^2 + By^2 + Cz^2 + Dxy + Exz + Fyz + Gx + Hy + Mz + N = 0$$

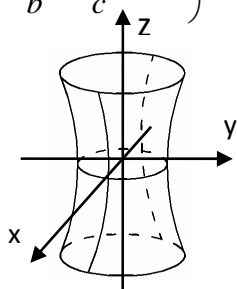
Hiperboloizi

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2} = \pm 1$$

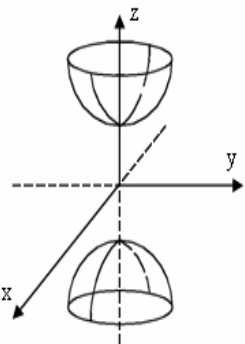
$$\left(\frac{x^2}{a^2} - \frac{y^2}{b^2} + \frac{z^2}{c^2} = \pm 1; -\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = \pm 1 \right)$$

„+” – cu o pânză

„-” – cu două pânze



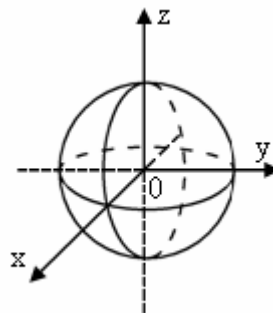
$$\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2} = 1$$



$$\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2} = -1$$

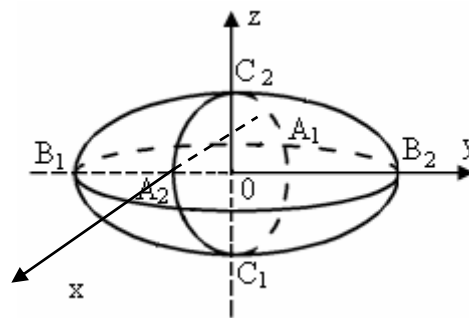
Sfera

$$x^2 + y^2 + z^2 = R^2$$



Elipsoidul

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$$



a, b, c – semiaxele elipsoidului

$$A_1(-a, 0, 0), A_2(a, 0, 0)$$

$$B_1(0, -b, 0), B_2(0, b, 0)$$

$$C_1(0, 0, -c), C_2(0, 0, c) \text{ – vârfurile}$$

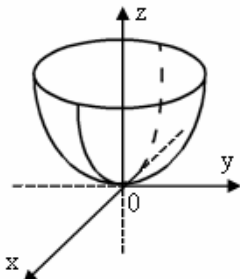
SUPRAFEȚE DE ORDINUL II

Paraboloizi

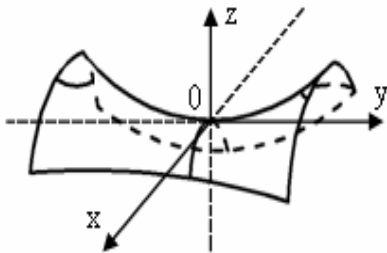
$$\frac{x^2}{p} + \frac{y^2}{q} = 2z \quad \left(\frac{x^2}{p} + \frac{z^2}{q} = 2y; \frac{y^2}{p} + \frac{z^2}{q} = 2x \right)$$

$pq > 0$ – eliptici, $pq < 0$ – hiperbolici

$$\frac{x^2}{p} + \frac{y^2}{q} = 2z \quad (p > 0, q > 0)$$



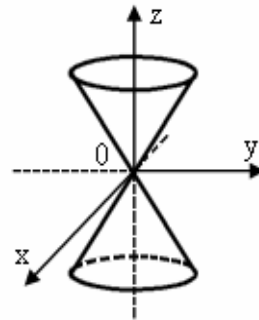
$$\frac{x^2}{p} + \frac{y^2}{q} = 2z \quad (p < 0, q < 0)$$



Conul de ordinul doi

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2} = 0$$

$$\left(\frac{x^2}{a^2} - \frac{y^2}{b^2} + \frac{z^2}{c^2} = 0; \right. \\ \left. -\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 0 \right)$$

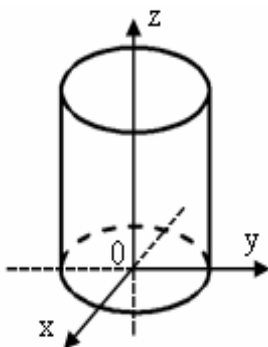


Cilindrii de ordinul doi

Circular

$$x^2 + y^2 = R^2$$

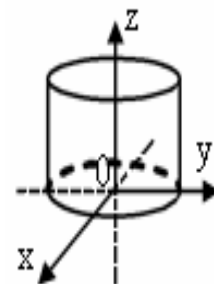
$$(x^2 + z^2 = R^2; y^2 + z^2 = R^2)$$



Eliptic

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

$$\left(\frac{x^2}{a^2} + \frac{z^2}{c^2} = 1; \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1 \right)$$

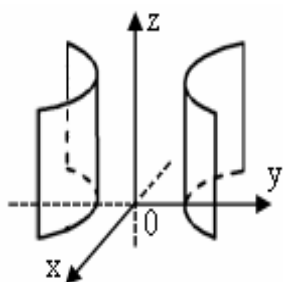


SUPRAFEȚE DE ORDINUL II

Hiperbolic

$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$$

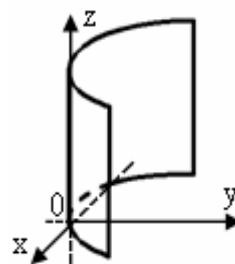
$$\left(\frac{x^2}{a^2} - \frac{z^2}{c^2} = 1; \frac{y^2}{b^2} - \frac{z^2}{c^2} = 1 \right)$$



Parabolic

$$x^2 = 2py$$

$$(x^2 = 2pz; z^2 = 2py)$$



Cazul degenerării: imagine imaginară

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = -1 \text{ - elipsoid imaginar}$$

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = -1 \text{ - cilindru eliptic imaginar}$$

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 0 \text{ - con de ordinul doi imaginar}$$

$$\frac{x^2}{a^2} = -1 \text{ - doua plane paralele imaginare}$$

; două plane

