CUADRICE

ELIPSOIDUL

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} - 1 = 0, \quad a,b,c > 0$$

HIPERBOLOIDUL CU O PÂNZĂ

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2} - 1 = 0, \quad a,b,c > 0$$

HIPERBOLOIDUL CU 2 PÂNZE

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2} + 1 = 0, \quad a,b,c > 0$$

PARABOLOIDUL ELIPTIC

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = z, \quad a,b > 0$$

PARABOLOIDUL HIPERBOLIC (SAU ȘA

$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = z, \quad a,b > 0$$

CONUL

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

CILINDRU ELIPTIC

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + 1 = 0, \quad a,b > 0$$

CILINDRU HIPERBOLIC

$$\frac{x^2}{a^2} - \frac{y^2}{b^2} - 1 = 0, \quad a,b > 0$$

CILINDRU PARABOLIC

$$y^2 = 2px, \quad p > 0$$

REUNIUNE DE PLANE SECANTE

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

REUNIUNE DE PLANE PARALELE

$$x^2 - a^2 = 0$$

REUNIUNE DE PLANE CONJUGATE

$$x^2 = 0$$

DREAPTĂ:

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

UN PUNCT

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

MULȚIMEA VIDĂ

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} + 1 = 0$$

$$a,b,c > 0$$

Ecuația generală a unei cuadrice:

$$S: a_{11}x^2 + a_{22}y^2 + 2a_{12}xy + 2a_{13}xz + 2a_{23}yz + 2a_{14}x + 2a_{24}y + 2a_{34}z + a_{44} = 0$$

$$\Rightarrow A = \left(\begin{array}{ccc|c} a_{11} & a_{12} & a_{13} & a_{14} \\ a_{21} & a_{22} & a_{23} & a_{24} \\ a_{31} & a_{32} & a_{33} & a_{34} \\ \hline a_{41} & a_{42} & a_{43} & a_{44} \end{array}\right), \quad A_3$$

$\Delta = \det(A)$

$\delta = \det(A_3)$

$I = \operatorname{tr}(A_3)$

$$J = \begin{vmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{vmatrix} + \begin{vmatrix} a_{11} & a_{13} \\ a_{13} & a_{33} \end{vmatrix} + \begin{vmatrix} a_{22} & a_{23} \\ a_{23} & a_{33} \end{vmatrix}$$

ADUCEREA LA FORMA CANONICĂ A CUADRICELOR

La fel ca la conice.

$$\Leftrightarrow (x\ y\ z)\, A_3 \begin{pmatrix} x \\ y \\ z \end{pmatrix} = -J$$