Classification des isométries affines en dimension 2

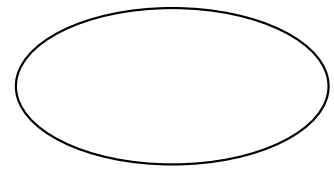
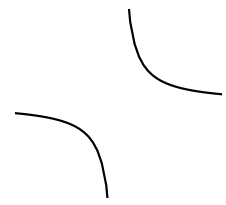
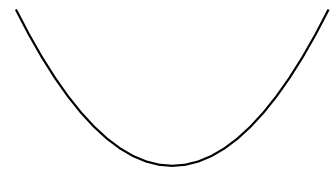
Isométries f de $\mathcal{P}$	directes	indirectes
$\mathrm{Fix}(f) = \mathcal{P}$	$\mathrm{id}_{\mathcal{P}}$	
$\mathrm{Fix}(f) =$ droite $\mathcal{D}$		symétrie orthogonale $\sigma_{\mathcal{D}}$
$\mathrm{Fix}(f) =$ point I	rotations de centre I et d'angle $\theta \notin 2\pi\mathbf{Z}$	
$\mathrm{Fix}(f) = \emptyset$	translations	symétries orthogonales glissées

Classification des isométries affines en dimension 3

Isométries f de $\mathcal{E}$ ($\dim \mathcal{E} = 3$)	directes	indirectes
$\mathrm{Fix}(f) = \mathcal{E}$	$\mathrm{id}_{\mathcal{E}}$	
$\mathrm{Fix}(f) =$ plan $\mathcal{P}$		symétrie orthogonale $\sigma_{\mathcal{P}}$
$\mathrm{Fix}(f) =$ droite $\mathcal{D}$	rotations d'axe $\mathcal{D}$ et d'angle $\theta \notin 2\pi\mathbf{Z}$	
$\mathrm{Fix}(f) =$ point		symétries centrales et rotations gauches d'angle $\theta \notin \pi\mathbf{Z}$
$\mathrm{Fix}(f) = \emptyset$	translations ($\mathrm{Fix}(\mathrm{vect}\, f) = E$) vissages ($\dim \mathrm{Fix}(\mathrm{vect}\, f) = 1$)	symétries orthogonales glissées

Coniques (dimension 2)

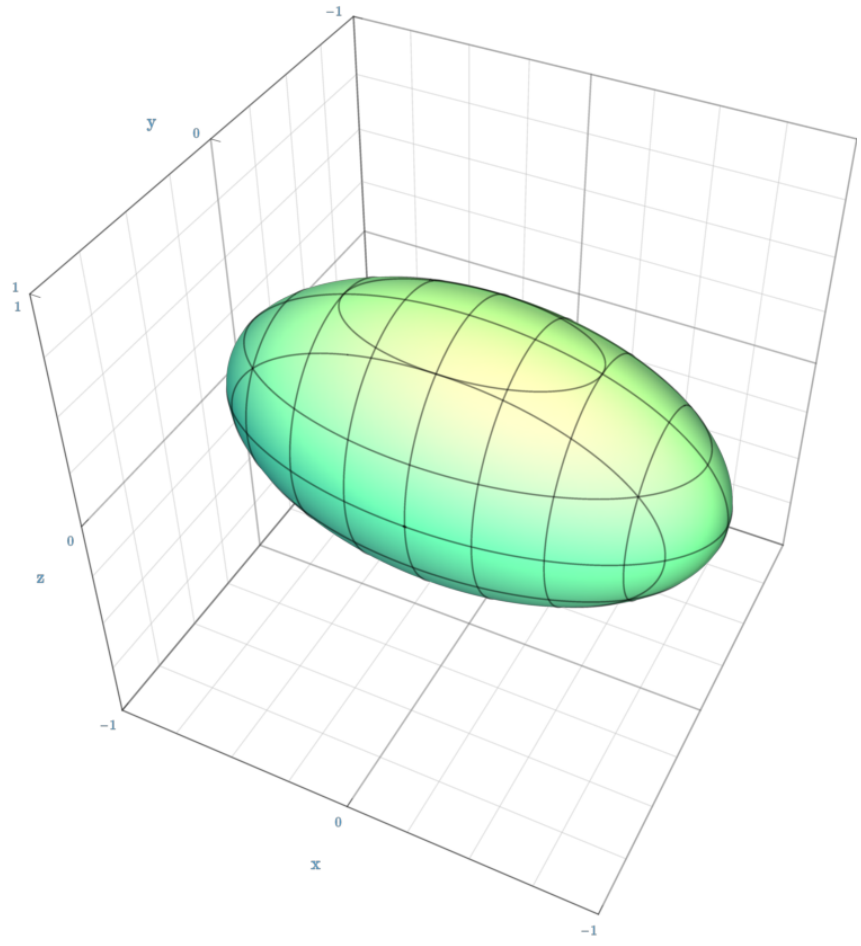
3 coniques “non triviales” :

forme réduite	nom	signature	dessin
$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$	ellipse	(2,0) ou (0,2)	
$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$	hyperbole	(1,1)	
$y^2 = 2px$	parabole	(1,0) ou (0,1)	

Quadriques (dimension 3)

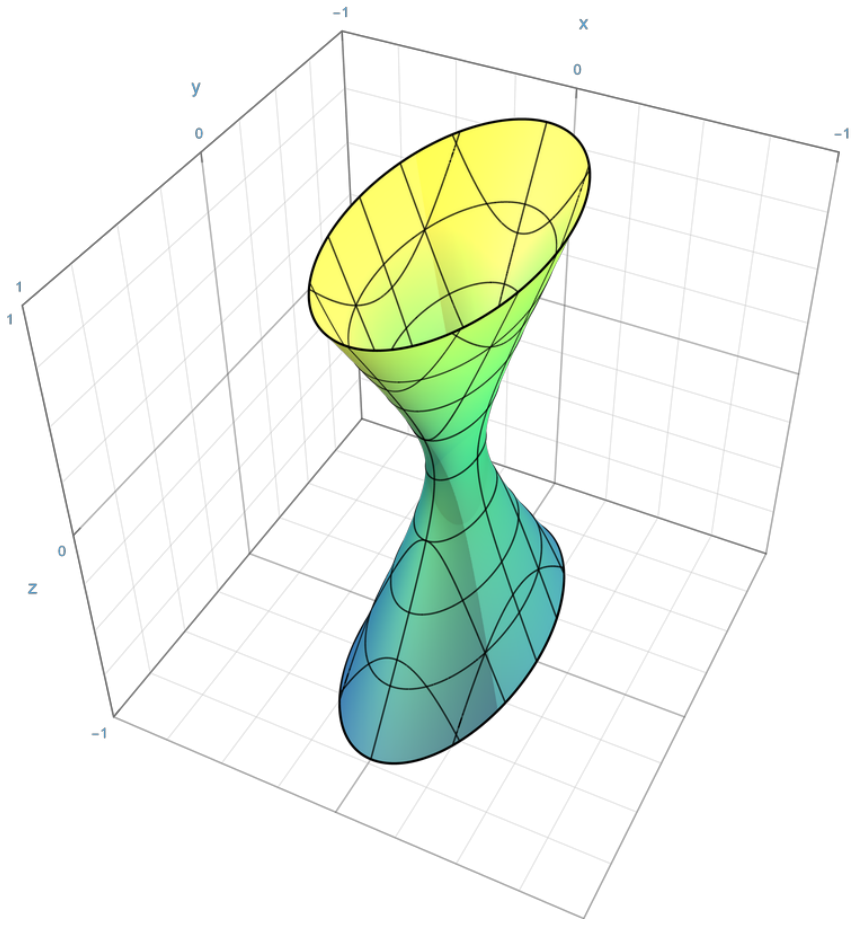
17 formes réduites de quadriques (!), dont 9 “non triviales”.

Ellipsoïde



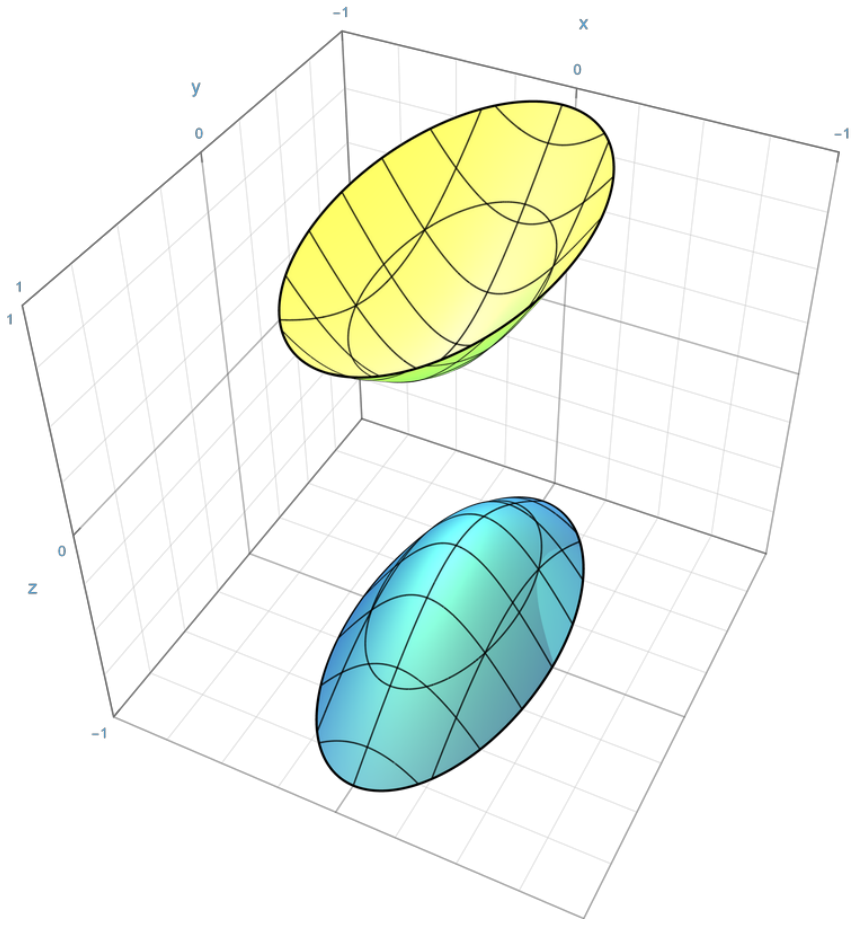
$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$$

Hyperboloïde à une nappe



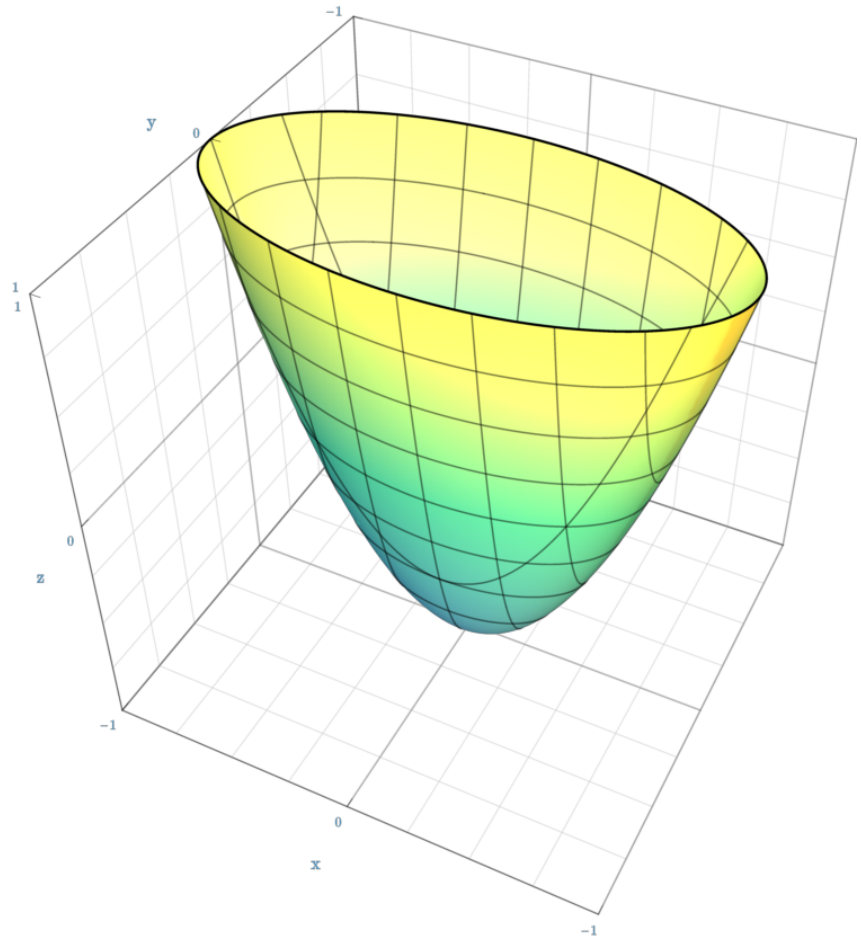
$$\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2} = 1$$

Hyperboloïde à deux nappes



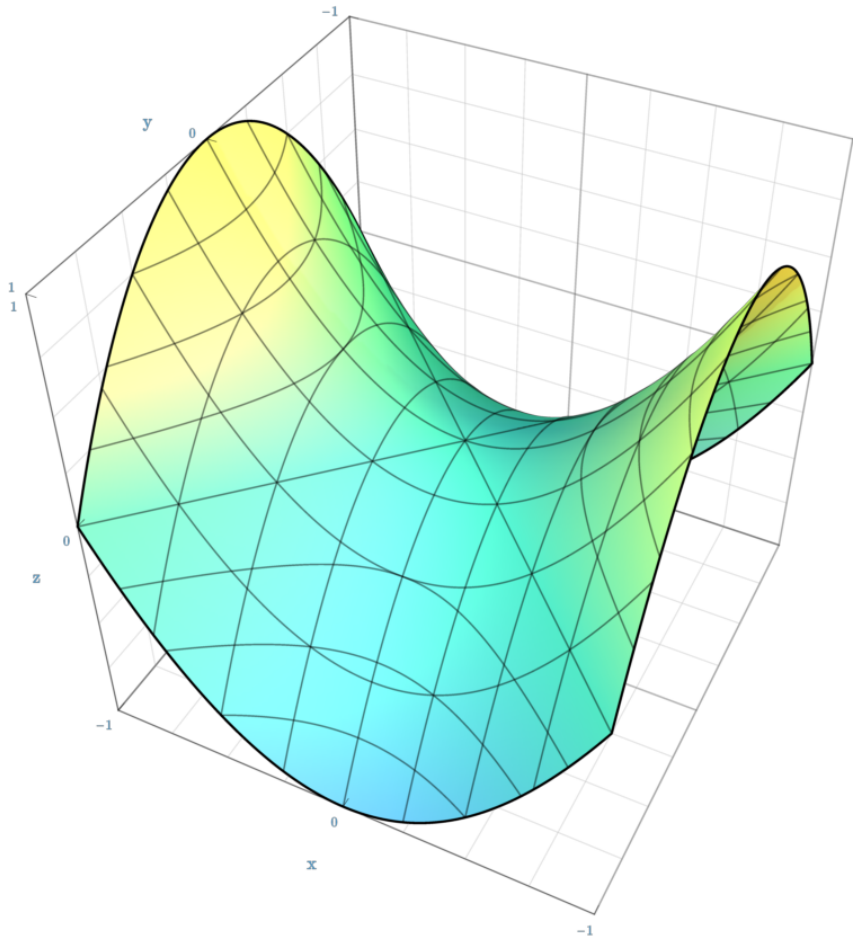
$$\frac{x^2}{a^2} - \frac{y^2}{b^2} - \frac{z^2}{c^2} = 1$$

Paraboloïde elliptique



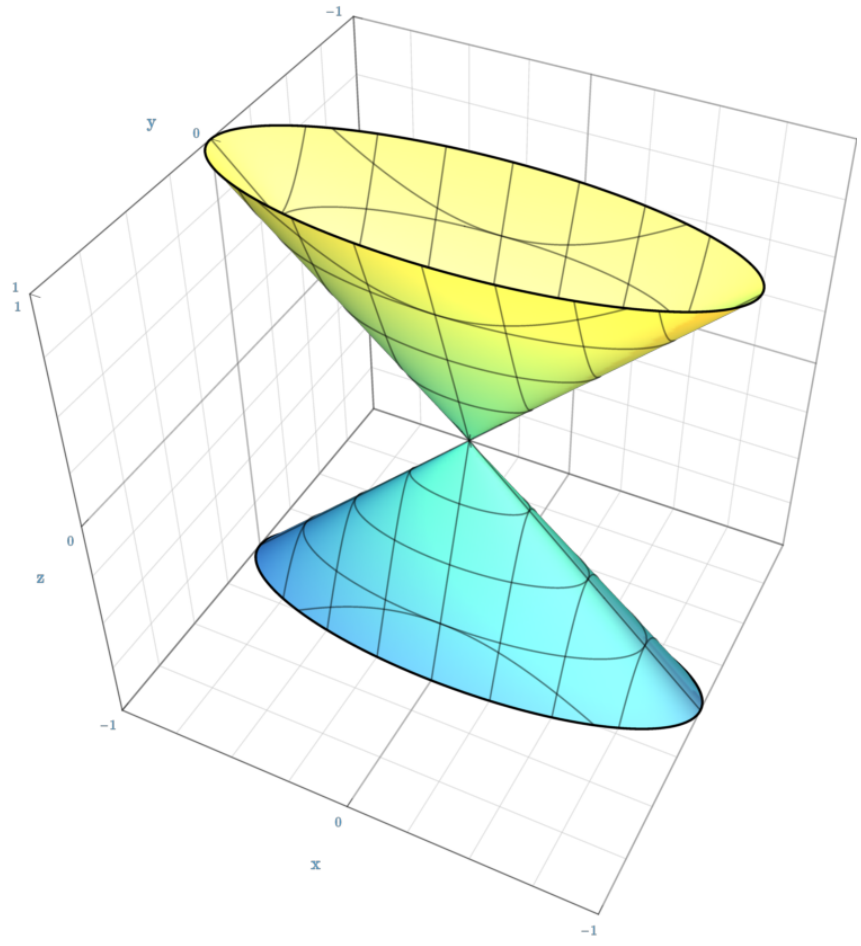
$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = z$$

Paraboloïde hyperbolique



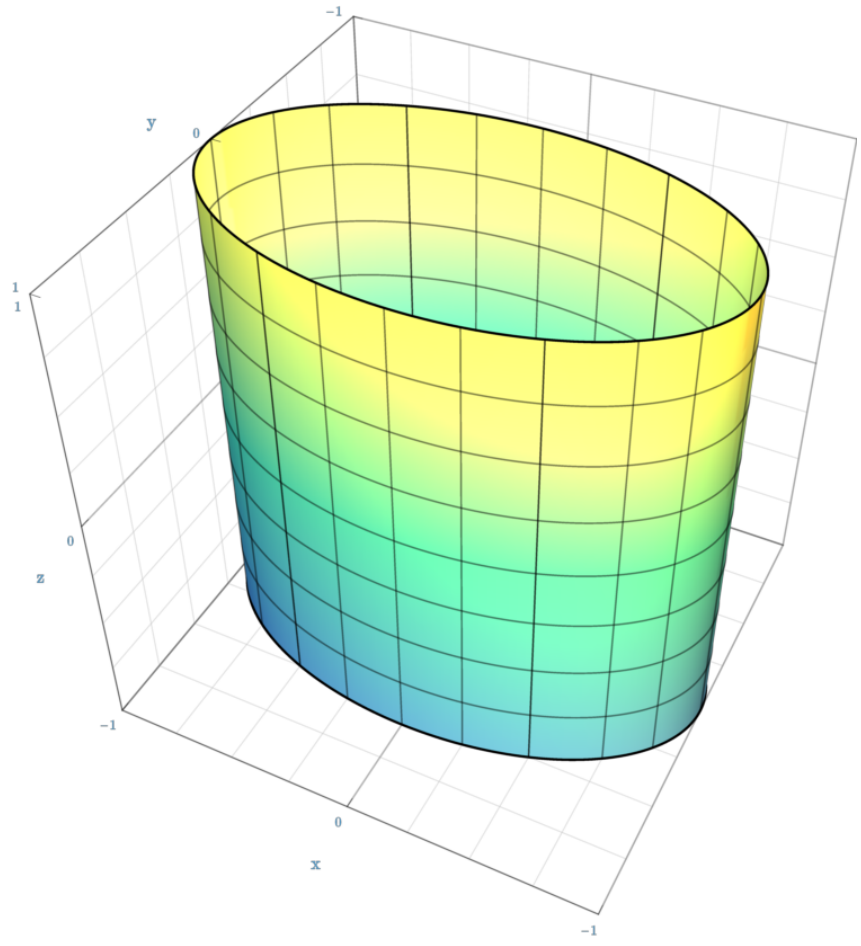
$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = z$$

Cône elliptique



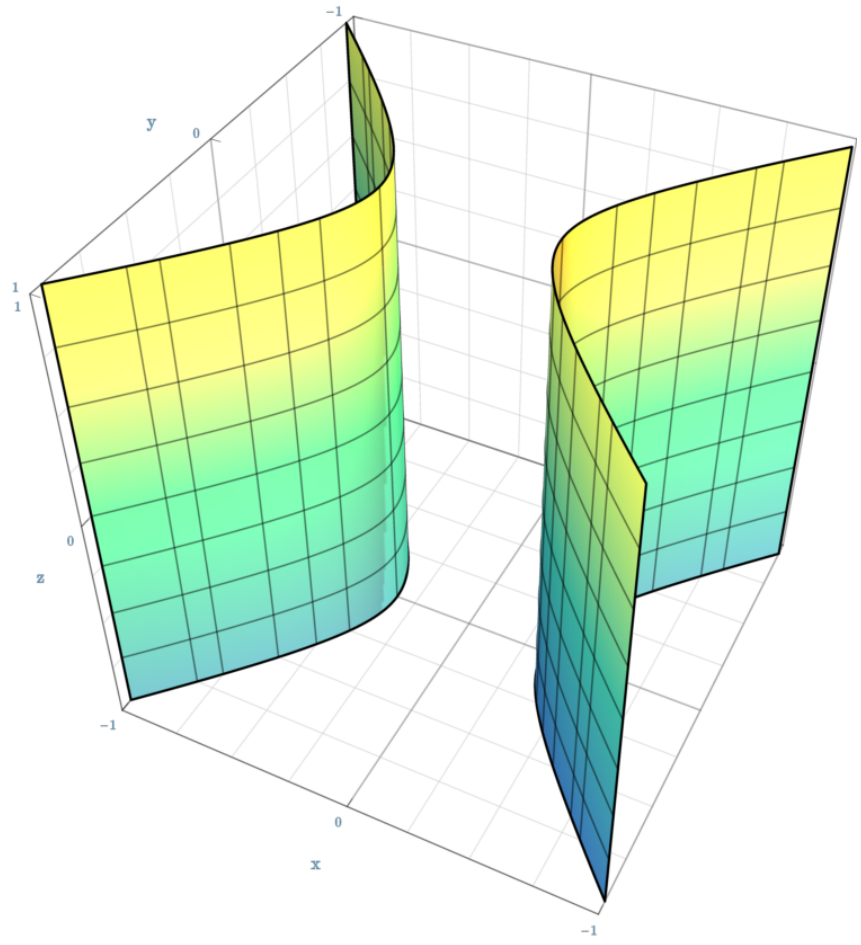
$$\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2} = 0$$

Cylindre elliptique



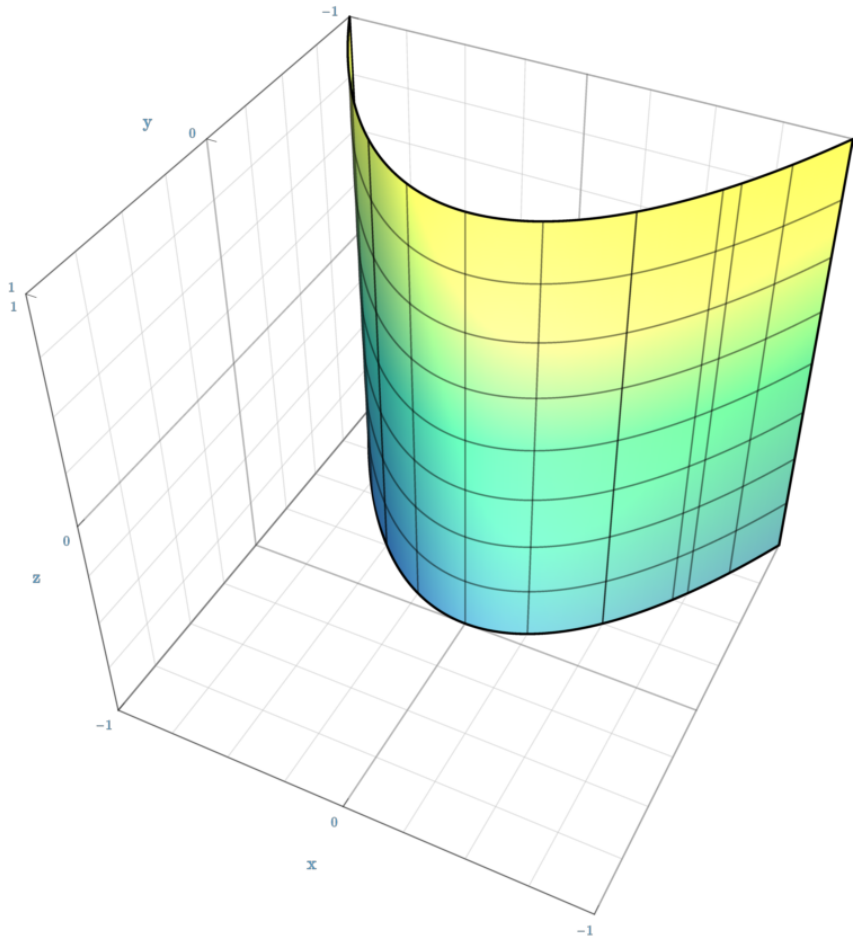
$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

Cylindre hyperbolique



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

Cylindre parabolique



$$\frac{x^2}{a^2} = 2py$$