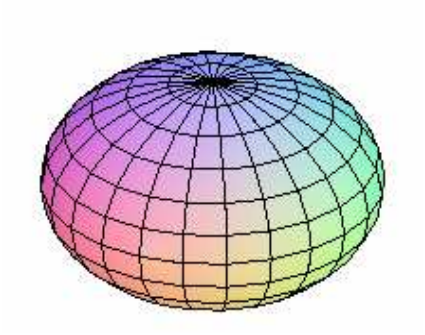
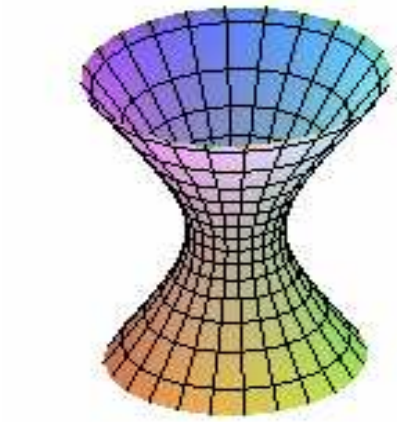
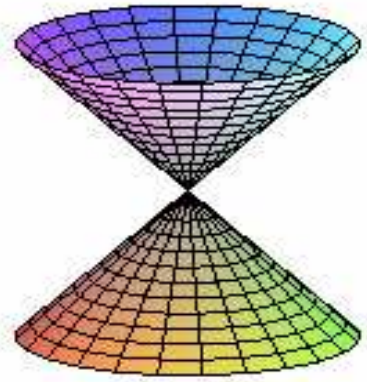
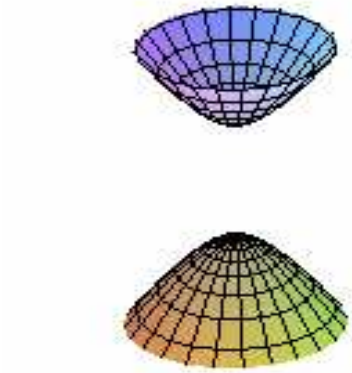
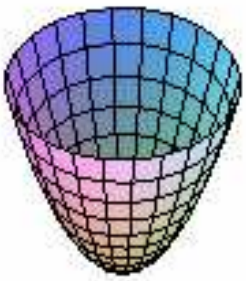
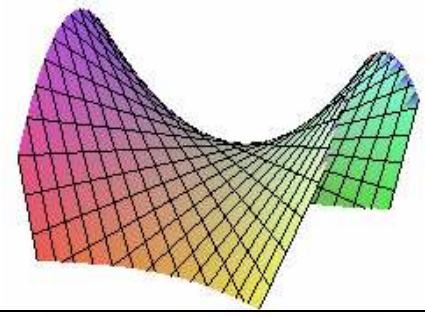
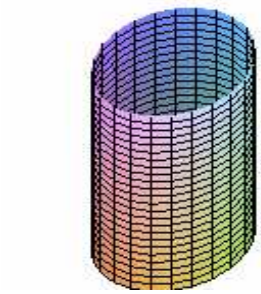
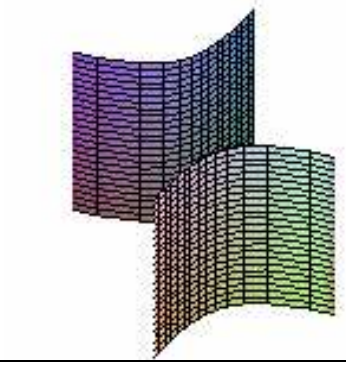
Quadriques affines réelles de $\mathbb{R}^3$

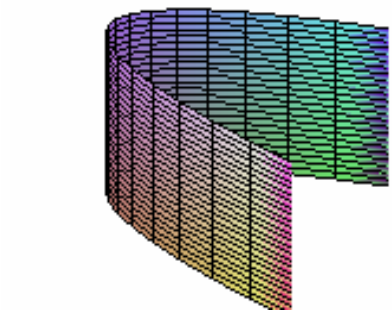
Quadriques de rang 3

	**Ellipsoïde** $\frac{X^2}{a^2}+\frac{Y^2}{b^2}+\frac{Z^2}{c^2}=1$ $\begin{cases} x(\vartheta,\phi)=a\sin\phi\cos\vartheta \\ y(\vartheta,\phi)=b\sin\phi\sin\vartheta \\ z(\vartheta,\phi)=c\cos\phi \end{cases}$
	**Hyperboloïde à une nappe** $\frac{X^2}{a^2}+\frac{Y^2}{b^2}-\frac{Z^2}{c^2}=1$ $\begin{cases} x(\vartheta,v)=a\,\mathrm{ch}\,v\cos\vartheta \\ y(\vartheta,v)=b\,\mathrm{ch}\,v\sin\vartheta \\ z(\vartheta,v)=c\,\mathrm{sh}\,v \end{cases}$
	**Cône quadratique** $\frac{X^2}{a^2}+\frac{Y^2}{b^2}-\frac{Z^2}{c^2}=0$ $\begin{cases} x(\vartheta,v)=av\cos\vartheta \\ y(\vartheta,v)=bv\sin\vartheta \\ z(\vartheta,v)=cv \end{cases}$
	**Hyperboloïde à deux nappes** $\frac{X^2}{a^2}+\frac{Y^2}{b^2}-\frac{Z^2}{c^2}=-1$ $\begin{cases} x(\vartheta,v)=a\,\mathrm{sh}\,v\cos\vartheta \\ y(\vartheta,v)=b\,\mathrm{sh}\,v\sin\vartheta \\ z(\vartheta,v)=\pm c\,\mathrm{ch}\,v \end{cases}$
$\{M\},\varnothing$	**Quadriques dégénérées**

Quadriques de rang 2

	**Paraboloïde elliptique** $\frac{X^2}{a^2}+\frac{Y^2}{b^2}=2pZ$ $\begin{cases} x(\vartheta,v)=av\cos\vartheta \\ y(\vartheta,v)=bv\sin\vartheta \\ z(\vartheta,v)=v^2/2p \end{cases}$
	**Paraboloïde hyperbolique** $\frac{X^2}{a^2}-\frac{Y^2}{b^2}=2pZ$ $\begin{cases} x(u,v)=av\,\mathrm{ch}\,u \\ y(u,v)=bv\,\mathrm{sh}\,u \\ z(u,v)=v^2/2p \end{cases}$
	**Cylindre elliptique** $\frac{X^2}{a^2}+\frac{Y^2}{b^2}=1$ $\begin{cases} x(\vartheta,v)=a\cos\vartheta \\ y(\vartheta,v)=b\sin\vartheta \\ z(\vartheta,v)=v \end{cases}$
	**Cylindre hyperbolique** $\frac{X^2}{a^2}-\frac{Y^2}{b^2}=1$ $\begin{cases} x(u,v)=a\,\mathrm{ch}\,u \\ y(u,v)=b\,\mathrm{sh}\,u \\ z(u,v)=v \end{cases}$
Une droite, deux plans sécants, ∅	**Quadriques dégénérées**

Quadriques de rang 1

	**Cylindre parabolique** $\frac{X^2}{a^2}=2pZ$ $\begin{cases} x(u,v)=au \\ y(u,v)=v \\ z(u,v)=u^2/2p \end{cases}$
Un plan, deux plans parallèles, ∅	**Quadriques dégénérées**