GeoGebra3D

3.7.2014

TIME 2014

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GeoGebra3D

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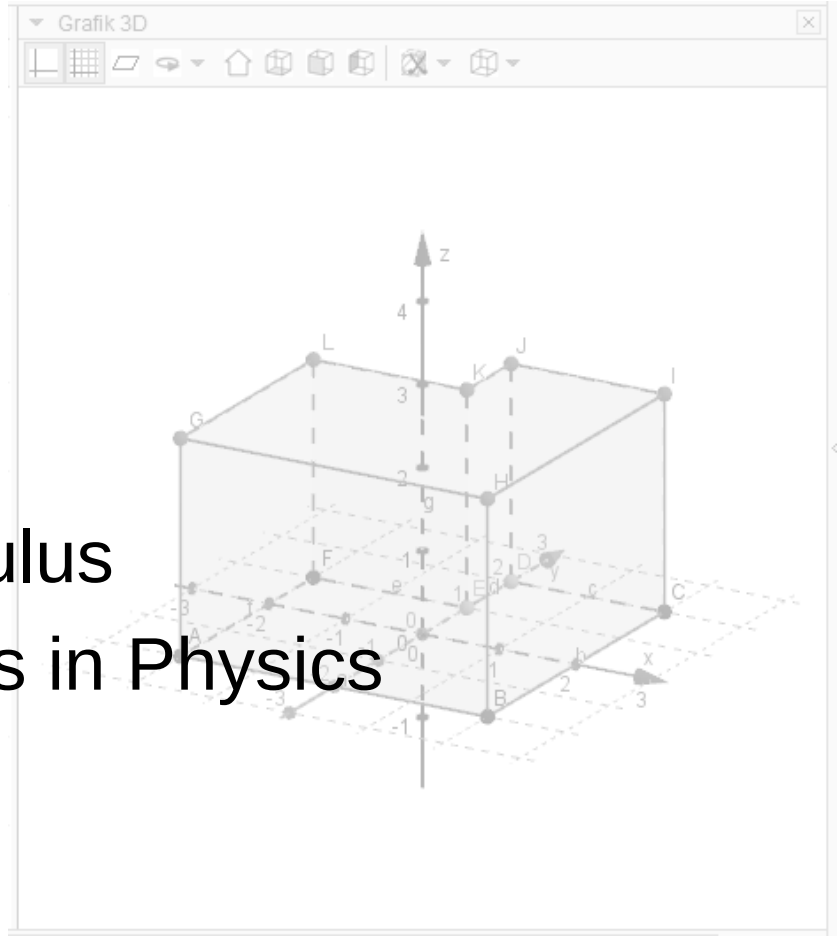
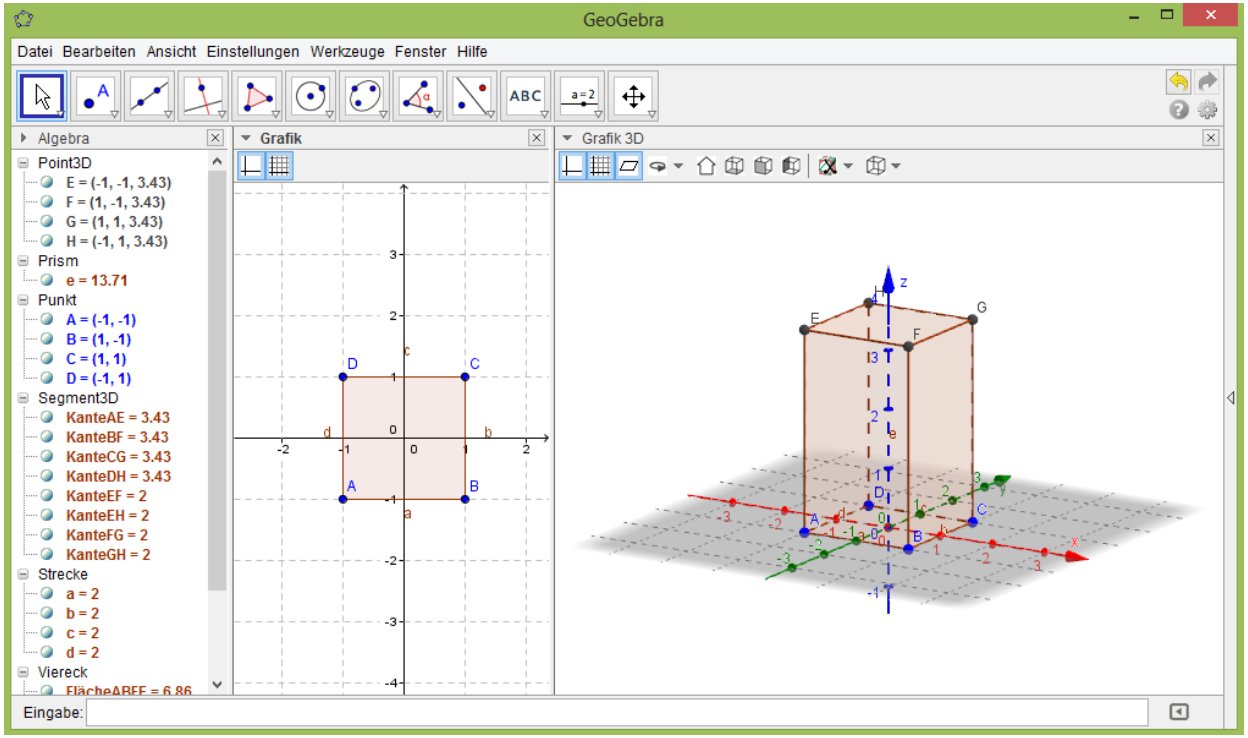


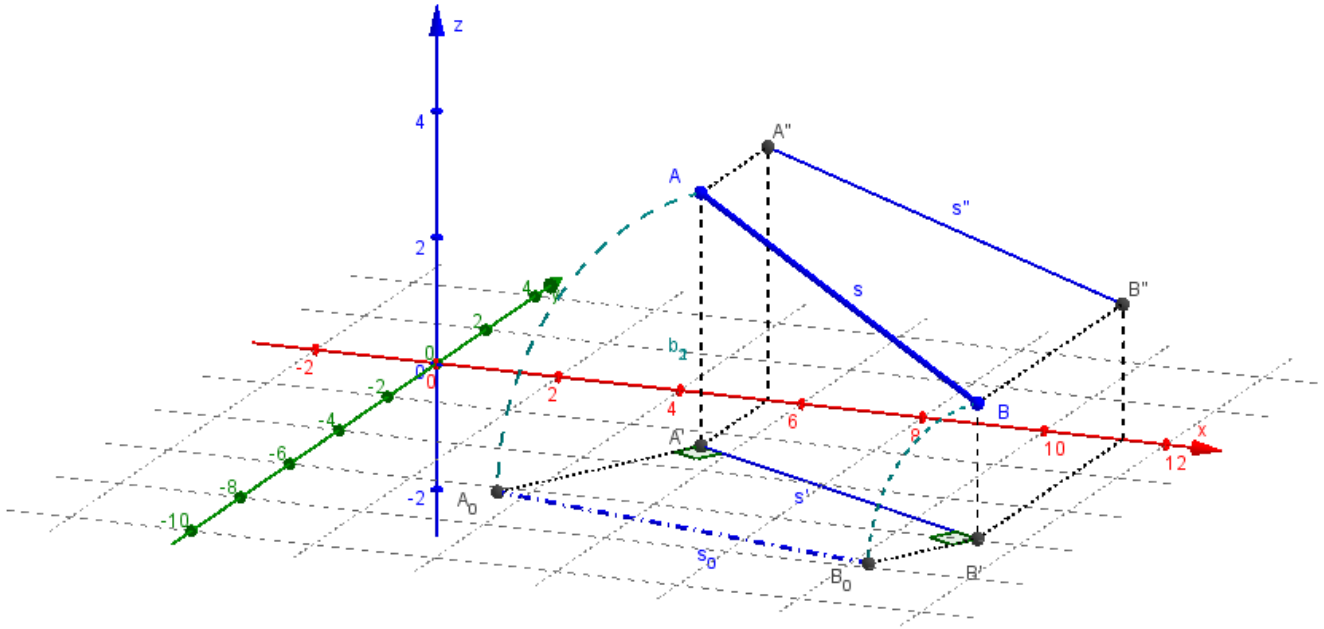
- Introduction
- Geometry
- Calculus (Analysis)
- Geometry and Calculus
- Applied Mathematics in Physics

Introduction - The Software



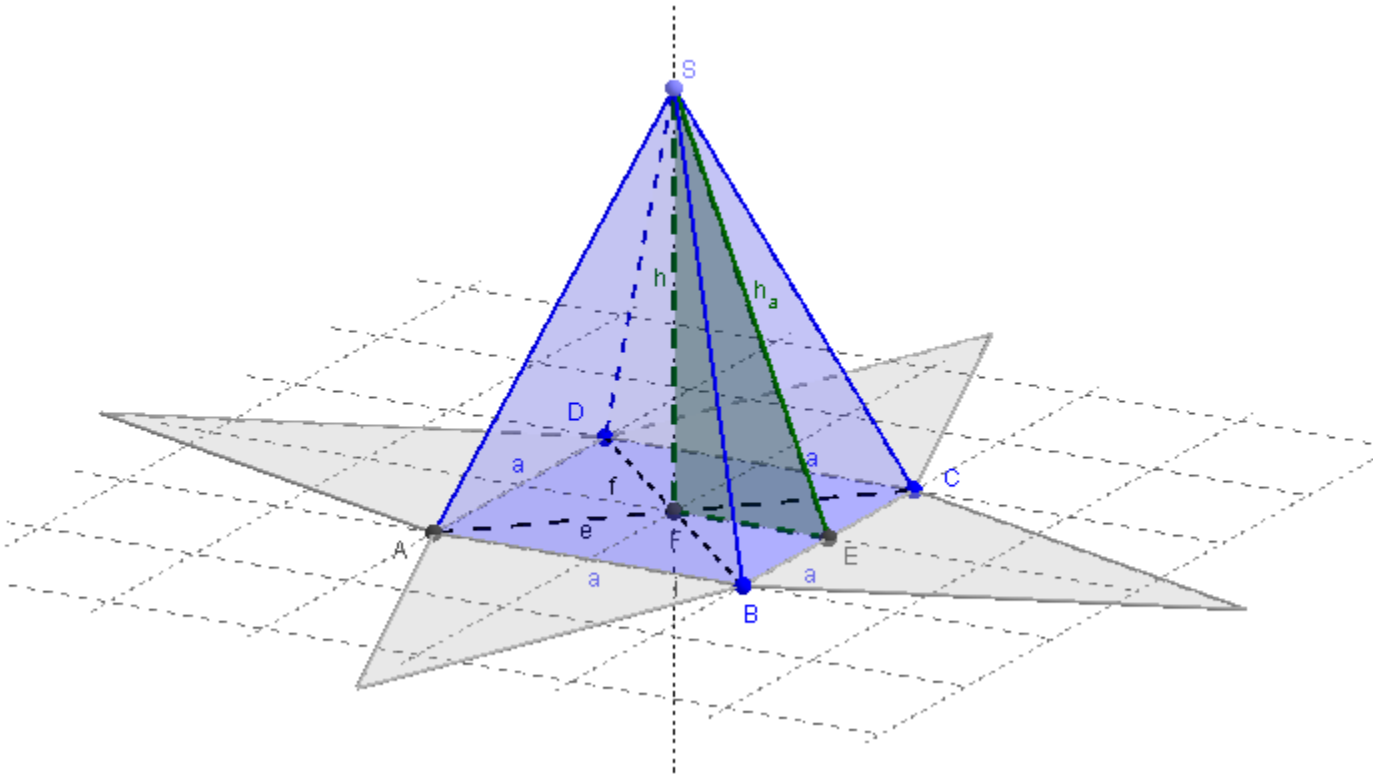
Geometry 1

True Length of a Line Segment



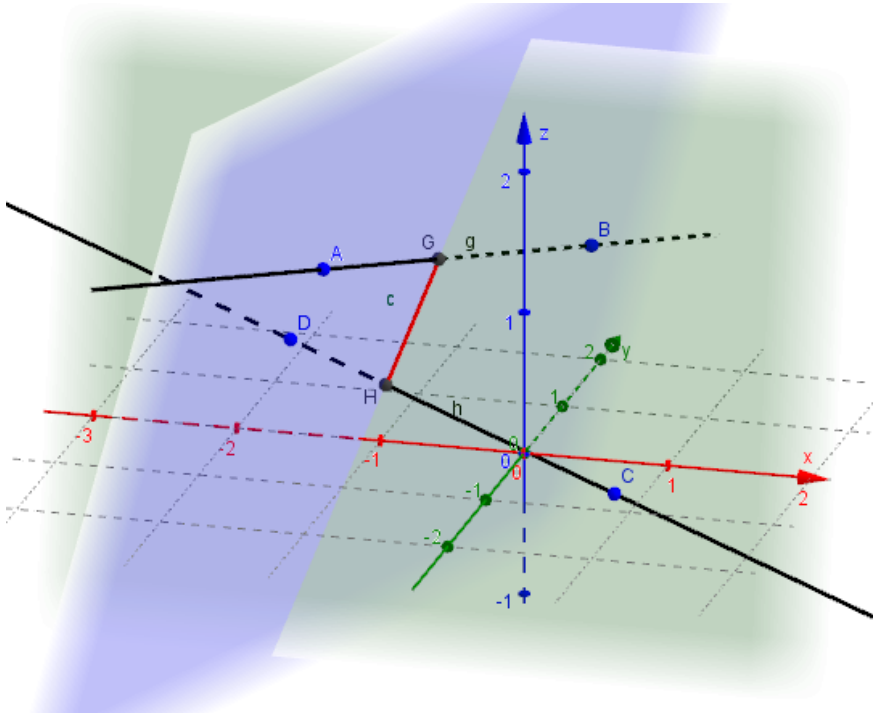
Geometry 1

Pyramid and Net



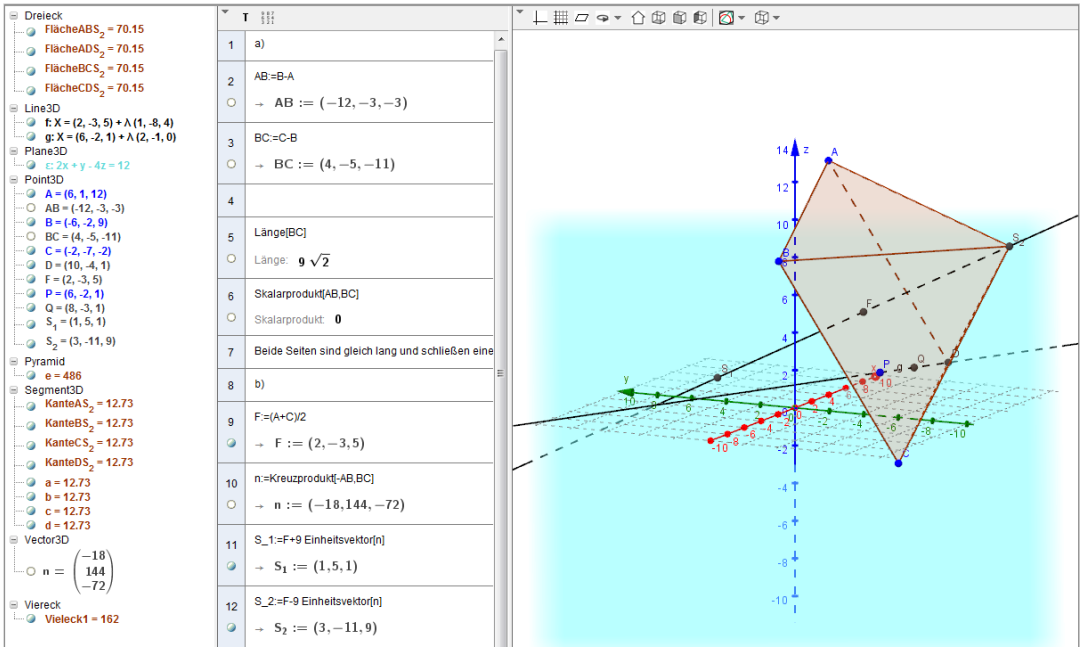
Geometry 2

Minimal Distance of two Skew Lines



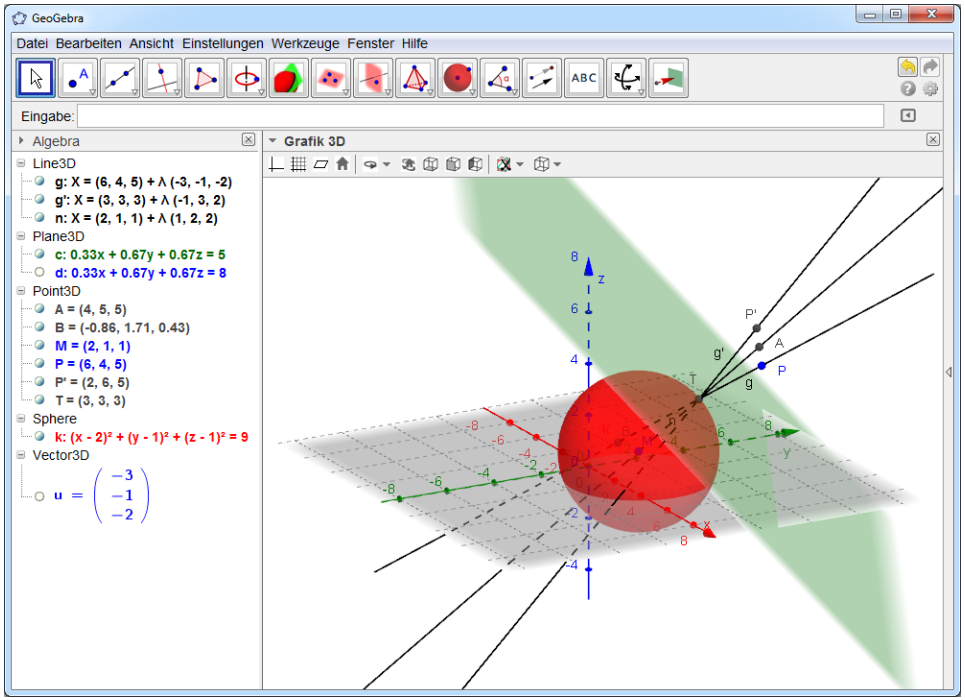
Geometry 3

Analytic Geometry: Pyramid



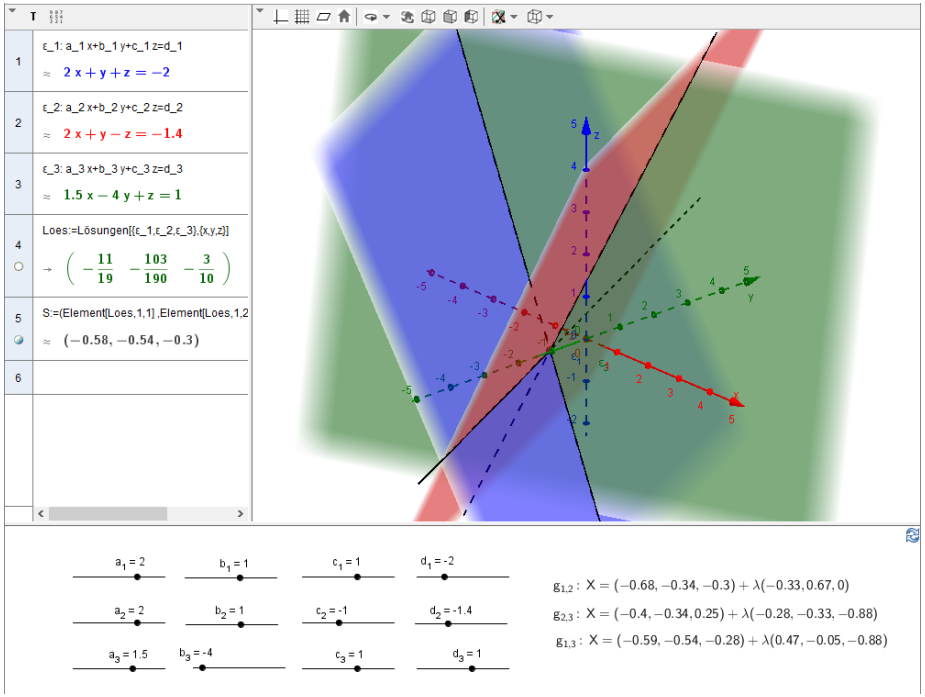
Geometry 4

Analytic Geometry: Reflexion of a Ray



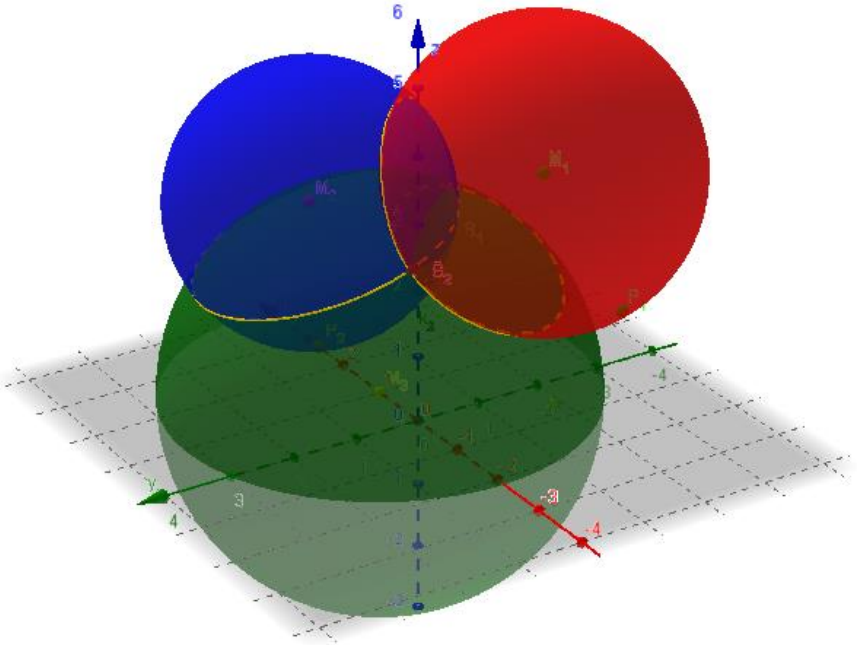
Geometry 5

Analytic Geometry: Intersection of 3 Planes



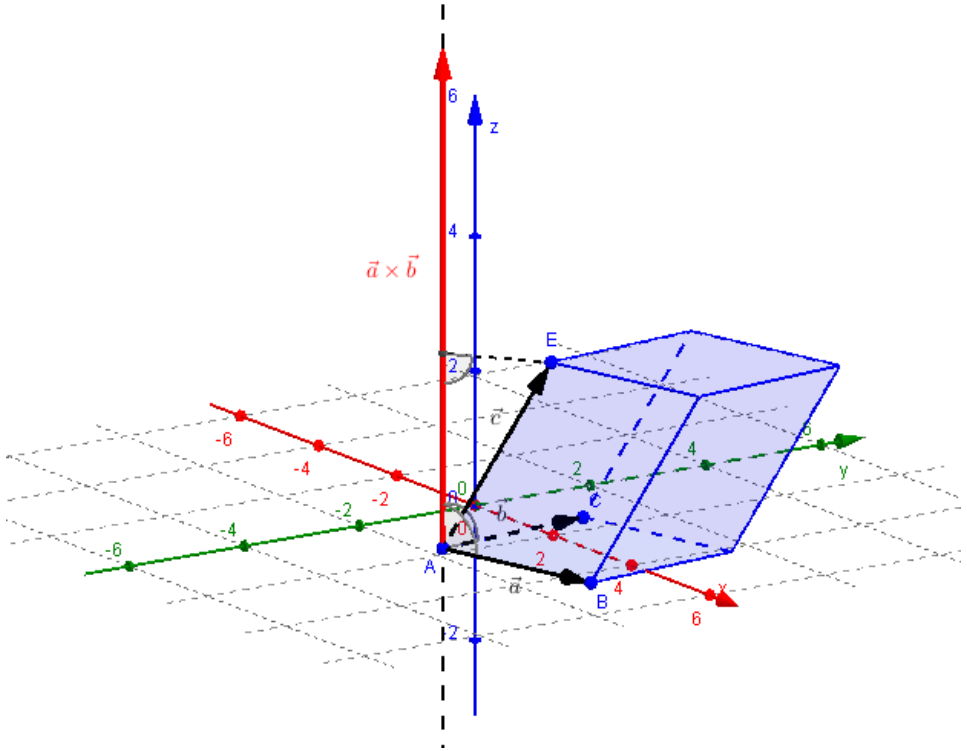
Geometry 6

Analytic Geometry: Intersection of 3 Spheres



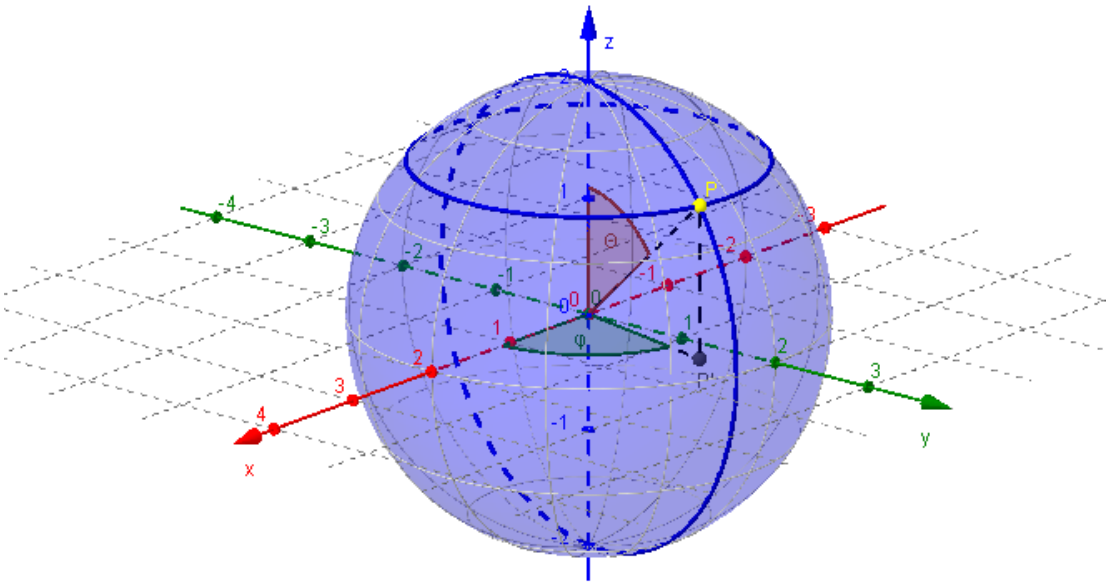
Geometry 7

Analytic Geometry: Parallelepiped



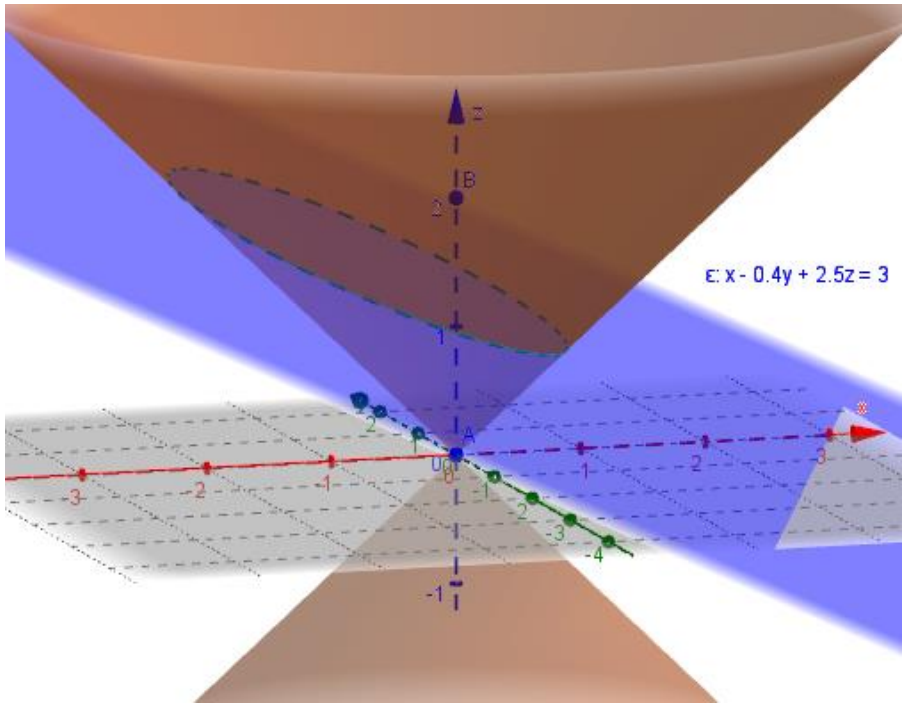
Geometry 8

Spherical Coordinates



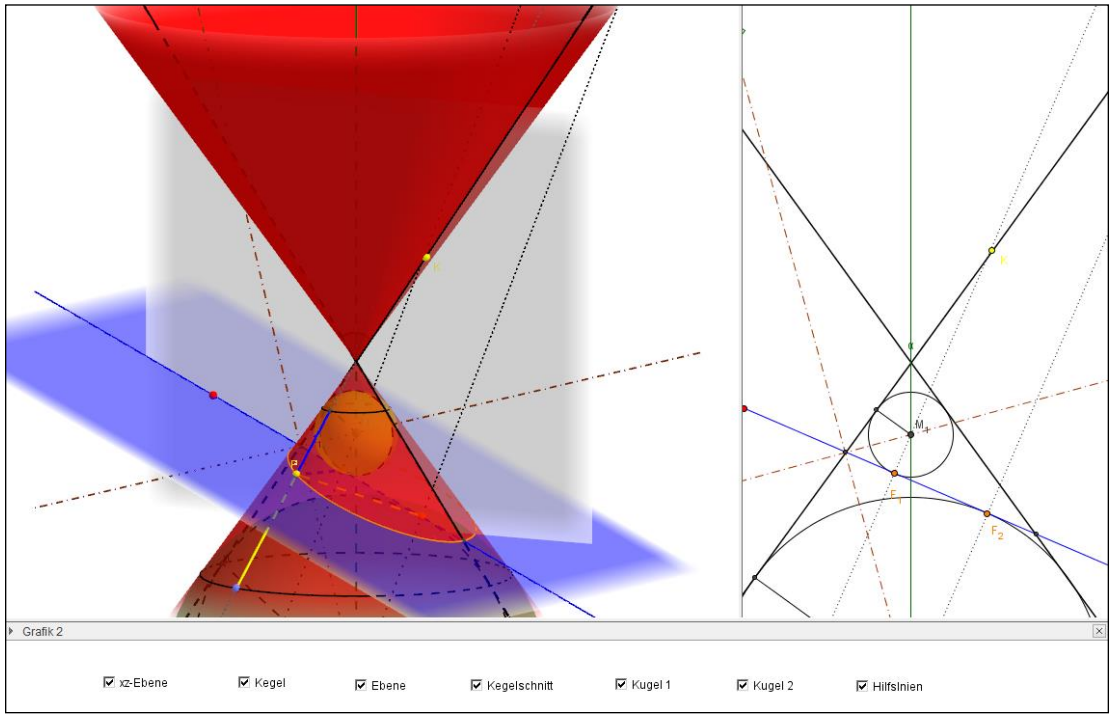
Geometry 9

Conics: Plane and Cone



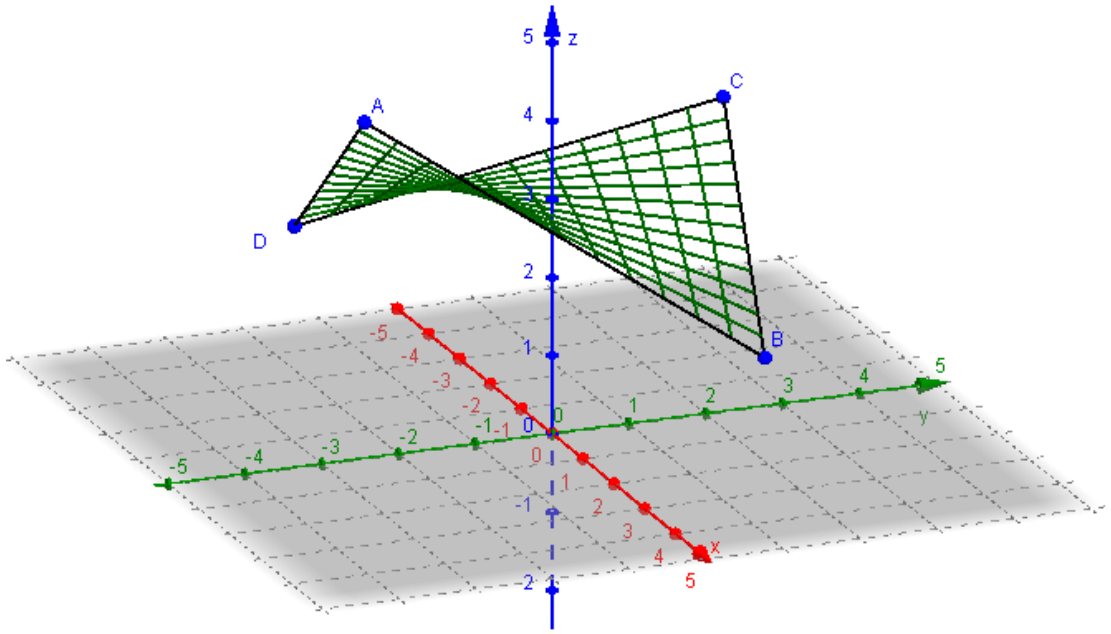
Geometry 10

Dandelin‘s Spheres



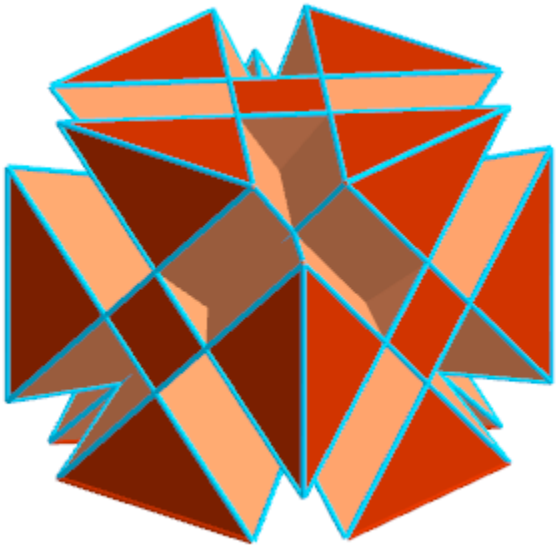
Geometry 11

Surface



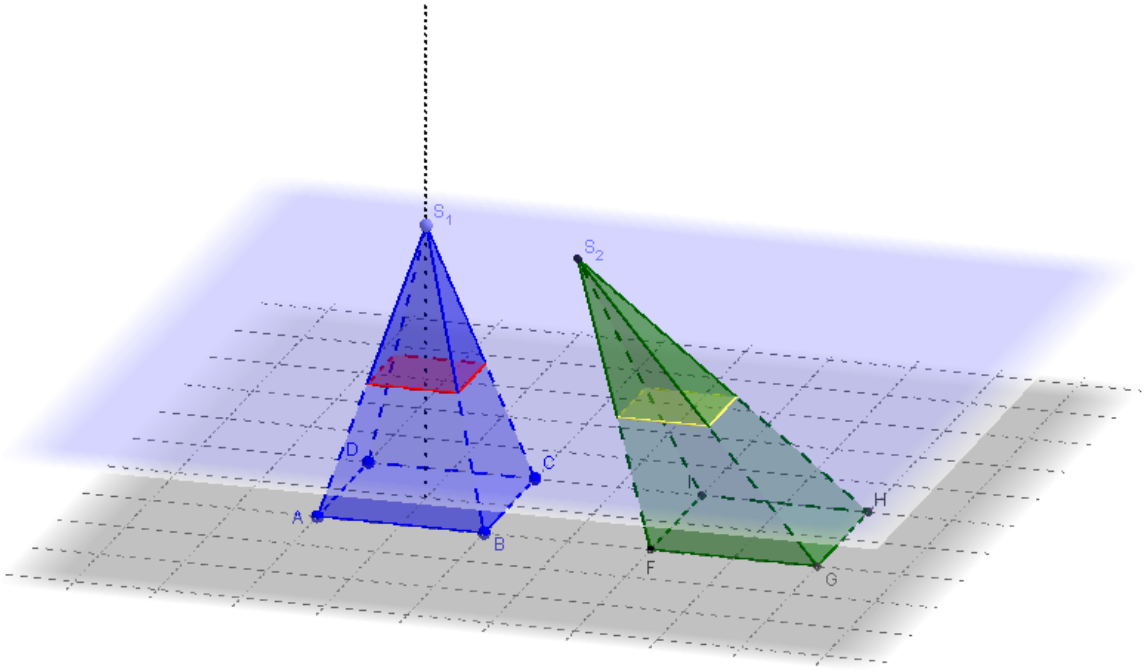
Geometry 12

Some more Geometry: Mariagami



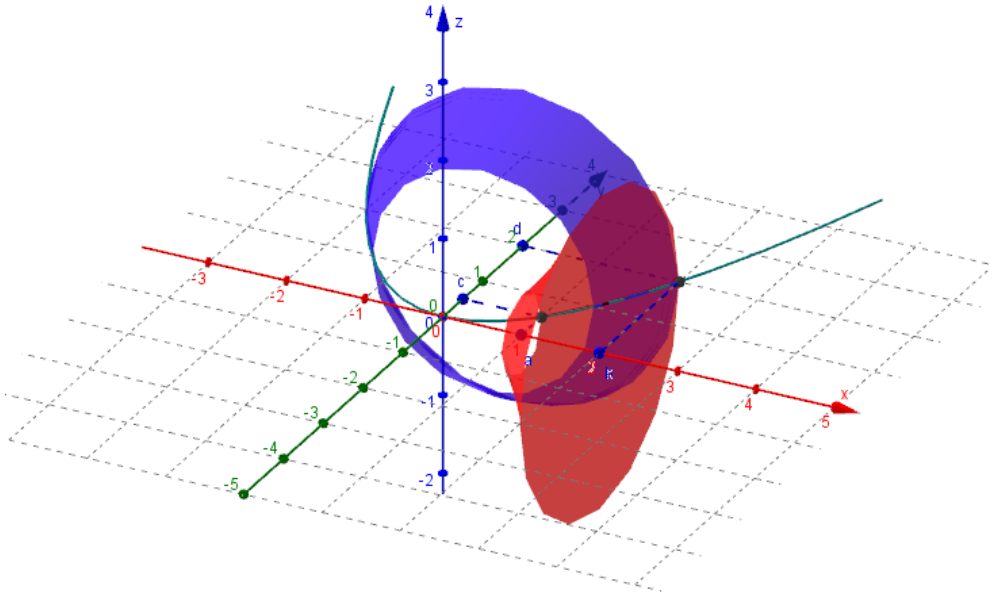
Calculus 1

Principle of Cavalieri



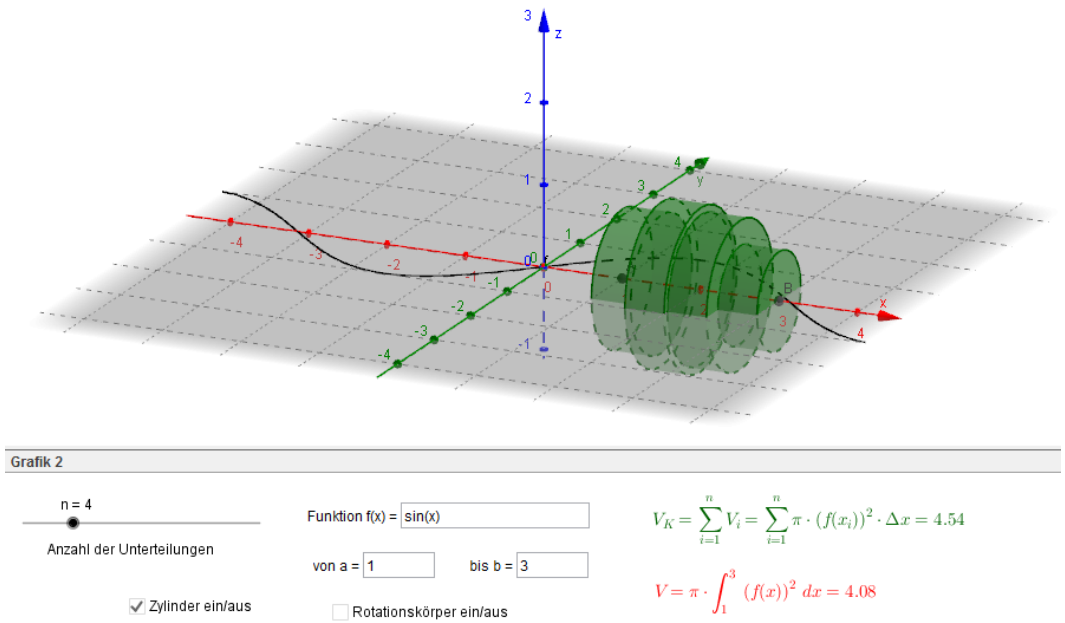
Calculus 2

Solids of Revolution



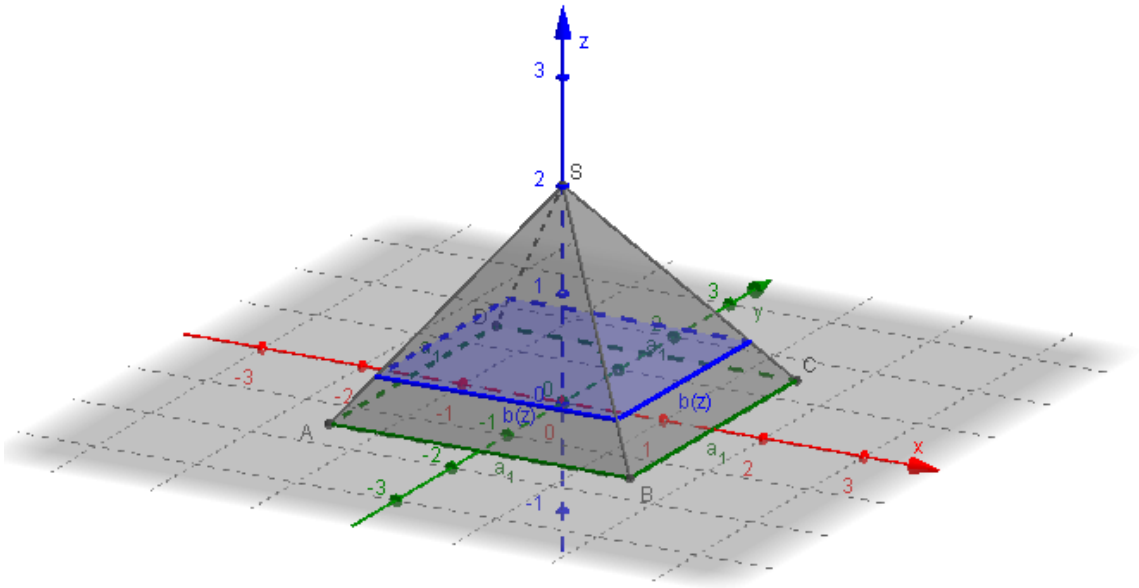
Calculus 3a

Calculation of Volumes



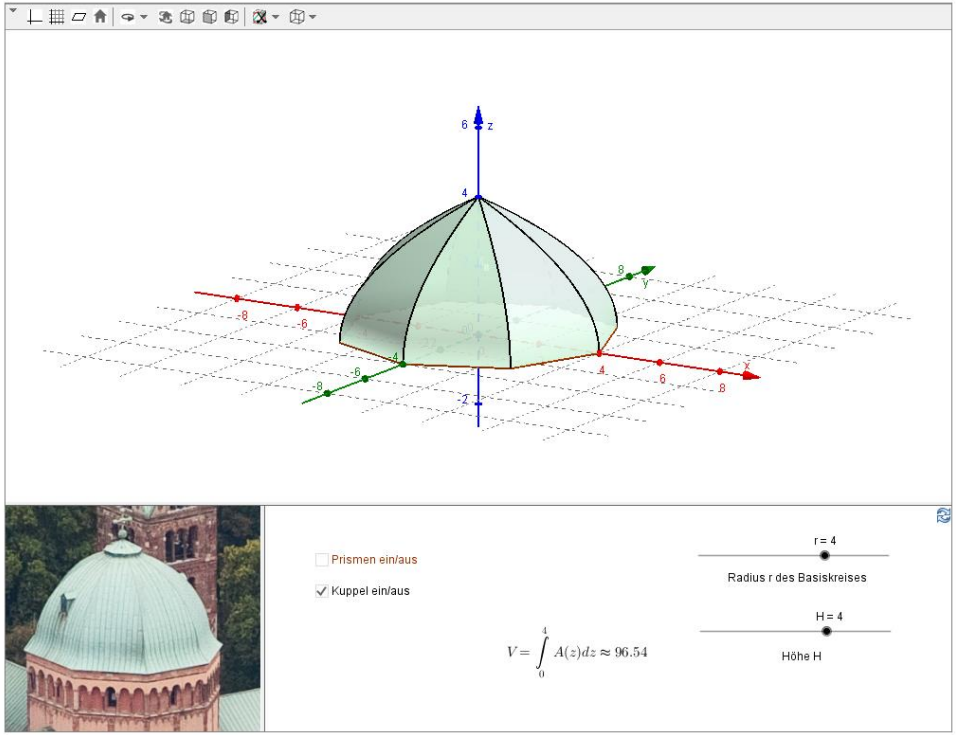
Calculus 3b

Calculation of Volumes



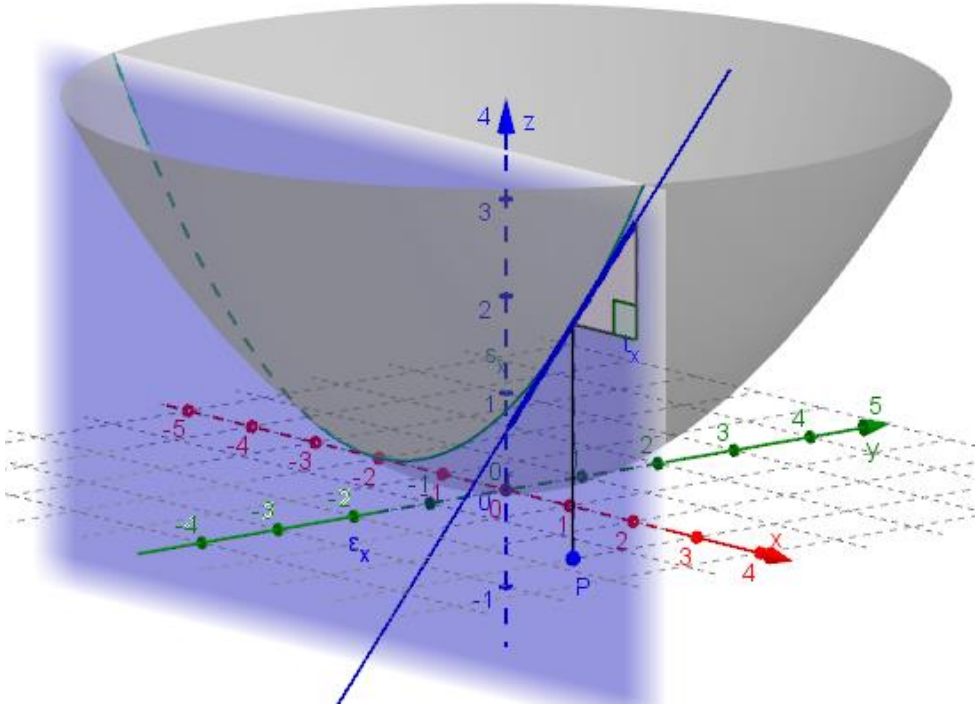
Calculus 3c

Calculation of Volumes



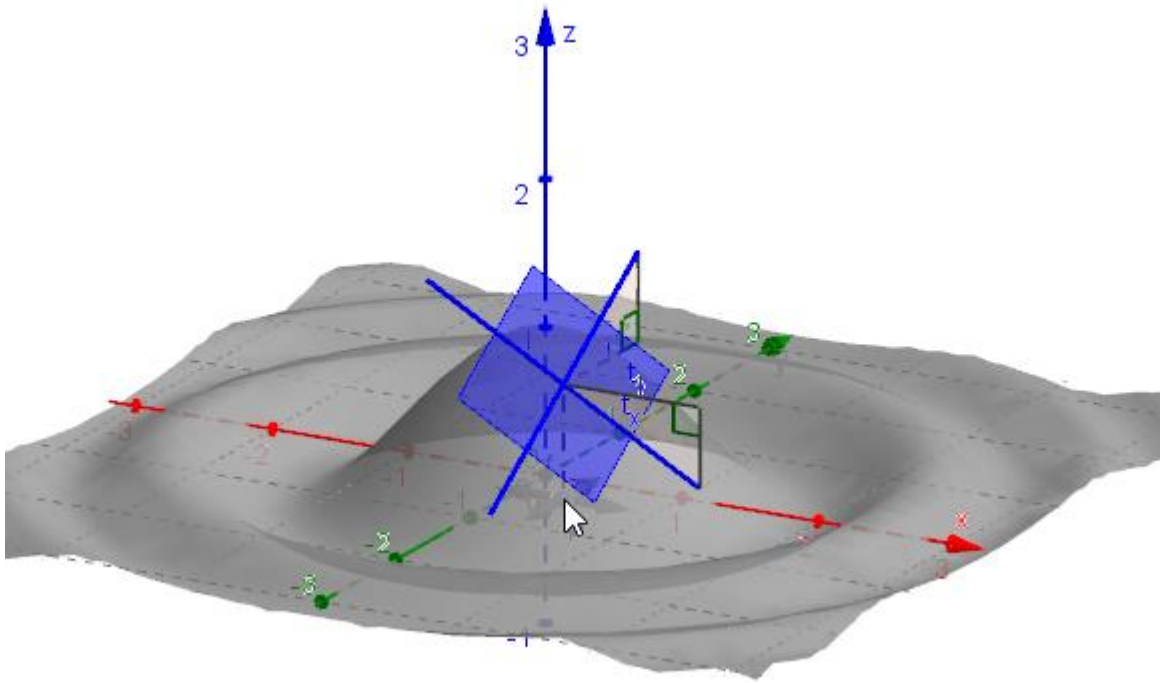
Calculus 4

Tangents of an Area



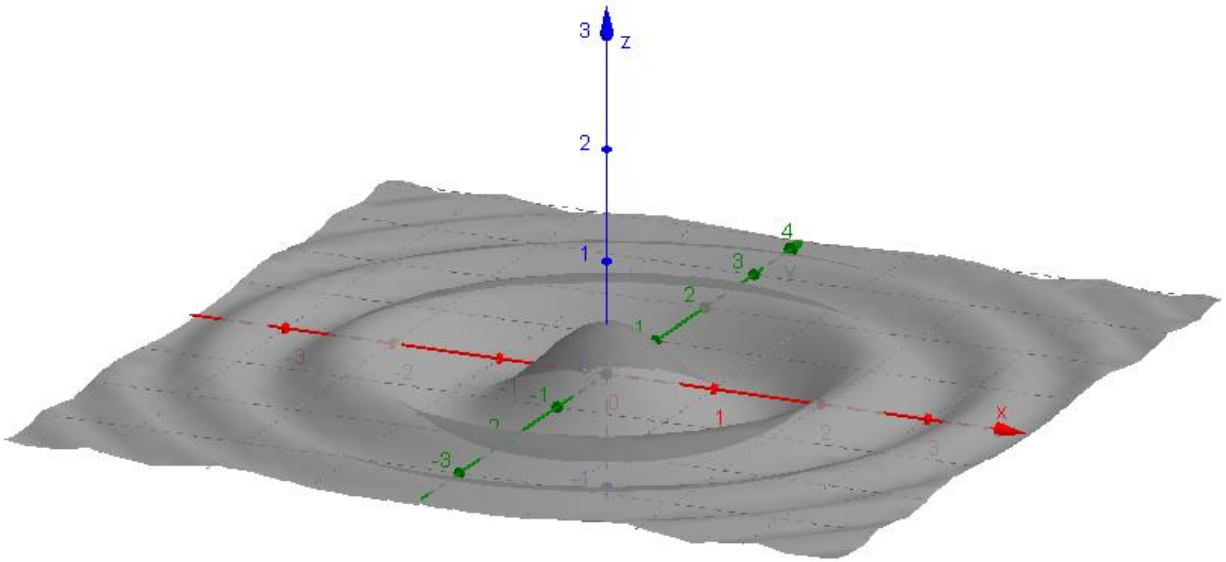
Calculus 5

Tangent Plane of an Area



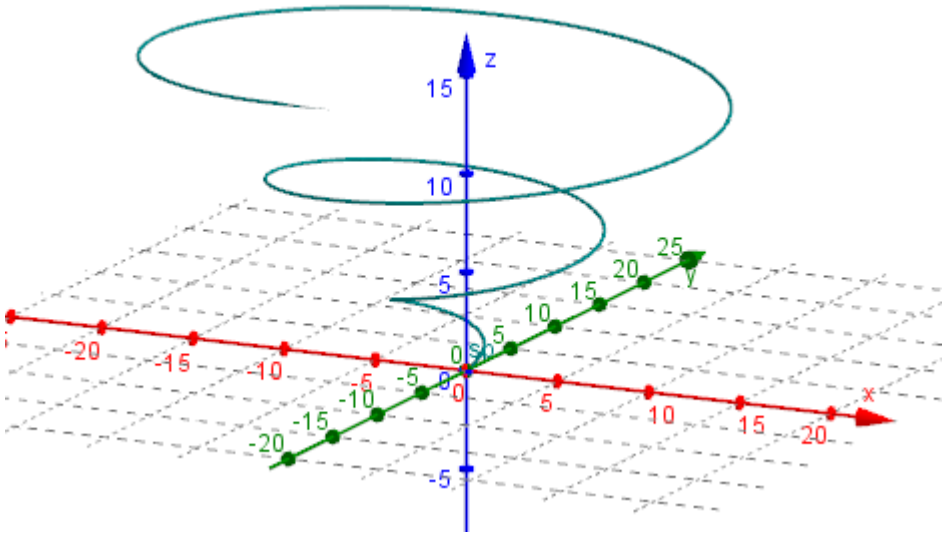
Calculus 6

Surface in Motion



Calculus 7

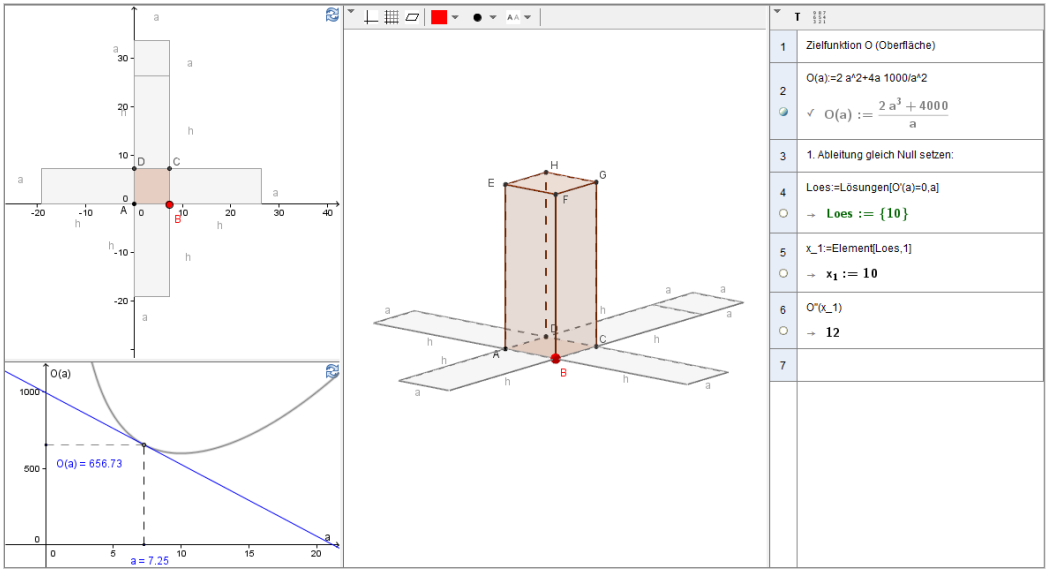
Spiral Curve



Geometry and Calculus 1

Optimization: Minimal Surface of a Cuboid (Prism)

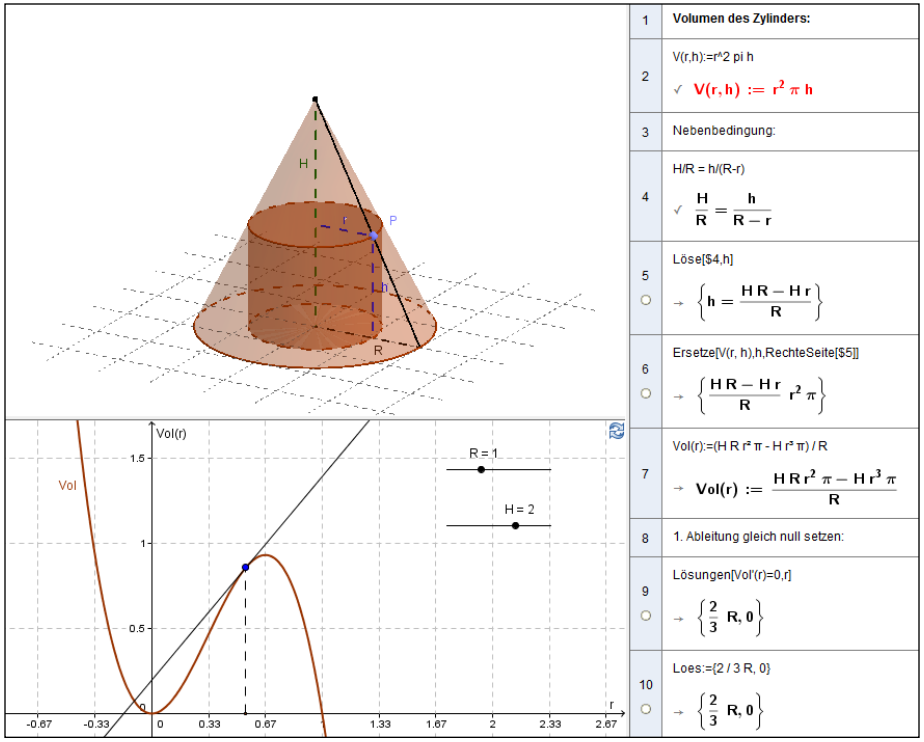
(2D-View, 3D-View and CAS)



Geometry and Calculus 2a

Optimization: Maximal Volume of a Cylinder

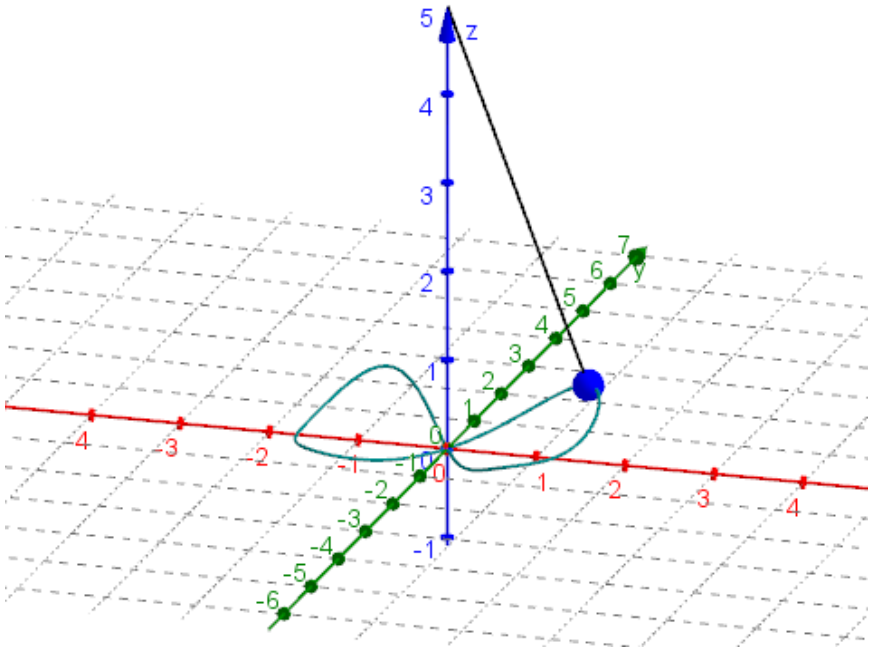
- 2D-View
- 3D-View
- CAS



1	**Volumen des Zylinders:**
2	V(r,h):=r^2 pi h ✓ $V(r,h) := r^2 \pi h$
3	Nebenbedingung:
4	H/R = h/(R-r) ✓ $\frac{H}{R} = \frac{h}{R-r}$
5	Löse[$4,h] → $\left\{h = \frac{H R - H r}{R}\right\}$
6	Ersetze[V(r, h),h,RechteSeite[$5]] → $\left\{\frac{H R - H r}{R} r^2 \pi\right\}$
7	Vol(r):=(H R r² π - H r³ π) / R → $Vol(r) := \frac{H R r^2 \pi - H r^3 \pi}{R}$
8	1. Ableitung gleich null setzen:
9	Lösungen[Vol'(r)=0,r] → $\left\{\frac{2}{3} R, 0\right\}$
10	Loes:={2 / 3 R, 0} → $\left\{\frac{2}{3} R, 0\right\}$

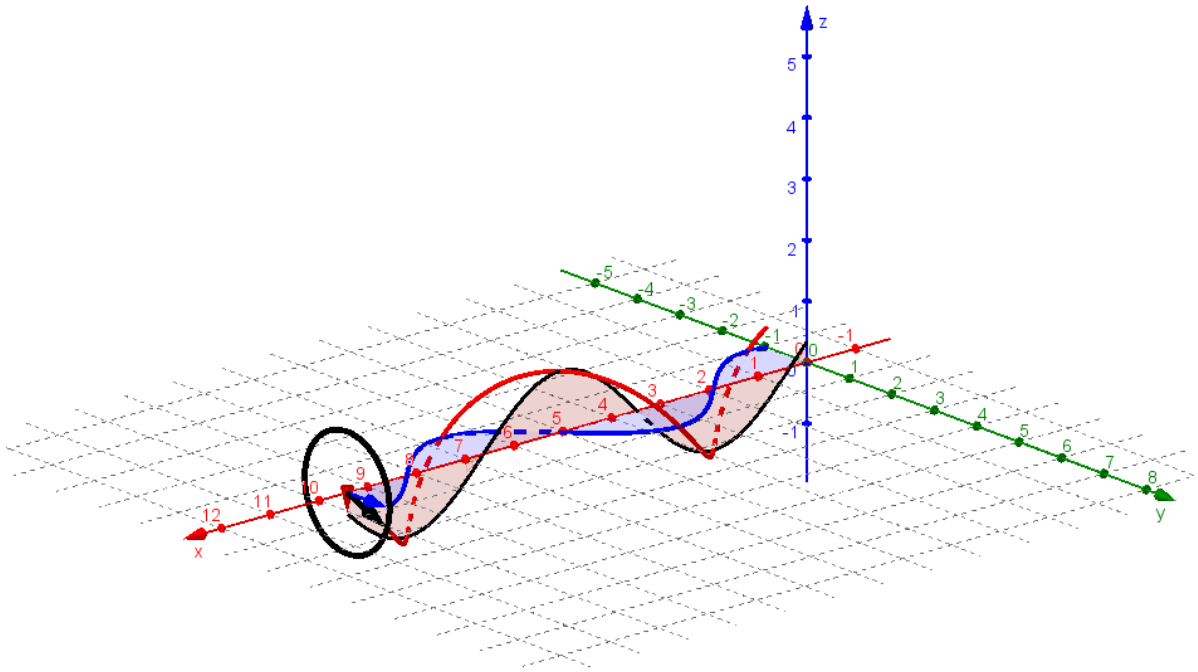
Applied Mathematics in Physics 1

Pendulum and Lissajous-Figures



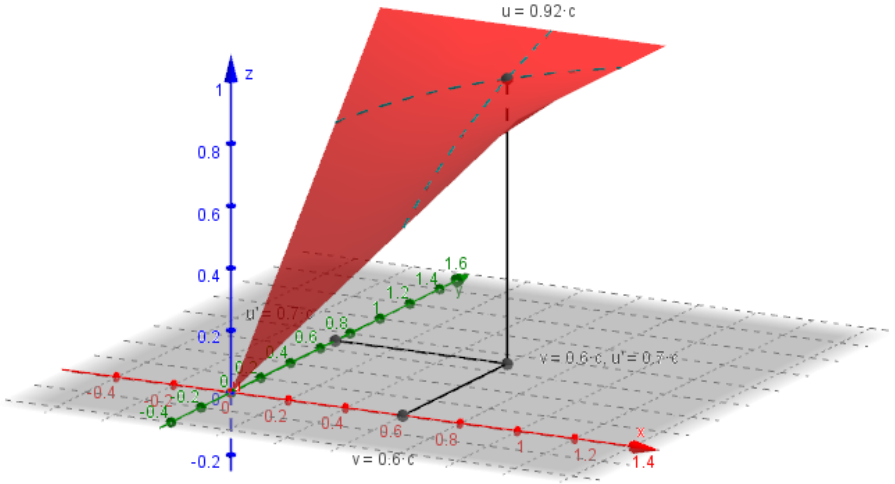
Applied Mathematics in Physics 2

Circular Polarized Waves



Applied Mathematics in Physics 3

Theory of Relativity: Addition of Velocities



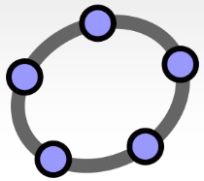
Grafik 2

$$u = \frac{v + u'}{1 + \frac{v \cdot u'}{c^2}} = 0.92 \cdot c$$

v = 0.6·c — Geschwindigkeit v

u' = 0.7·c — Geschwindigkeit u'

GeoGebra3D



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