# *Three (small) examples of problems of « optimal curves » which are still open*

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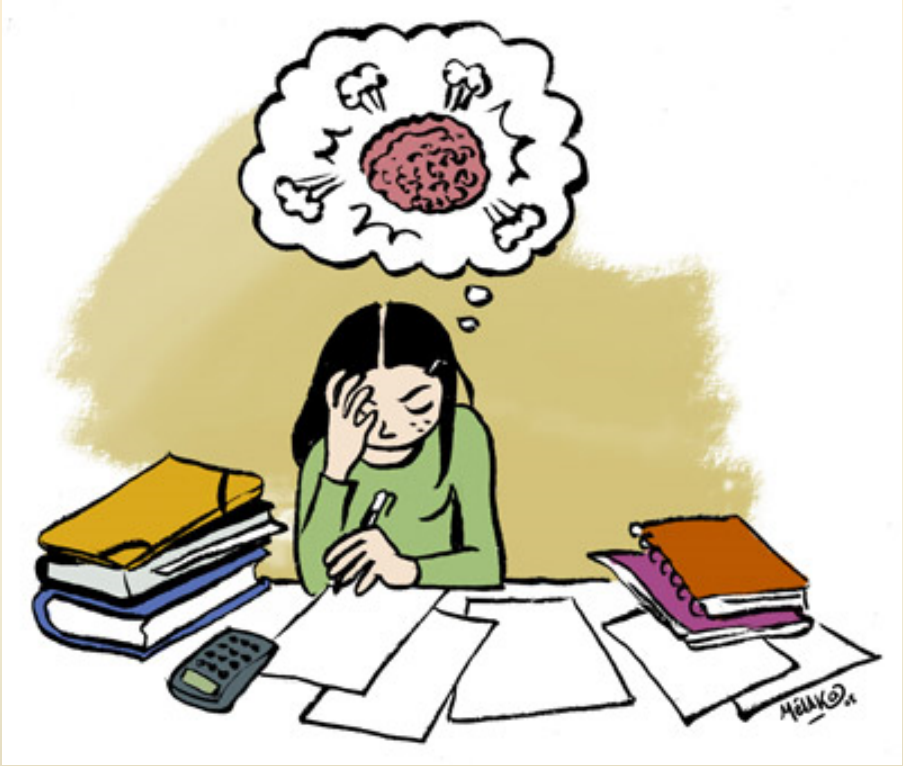
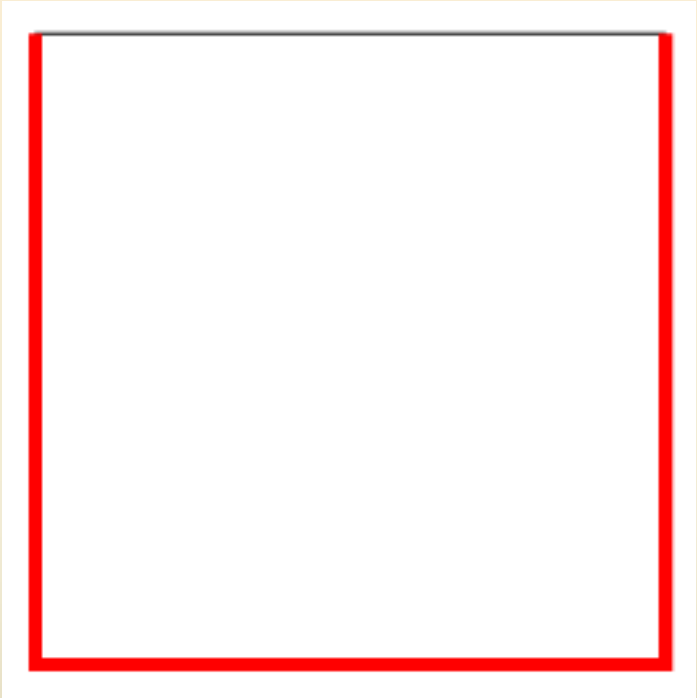
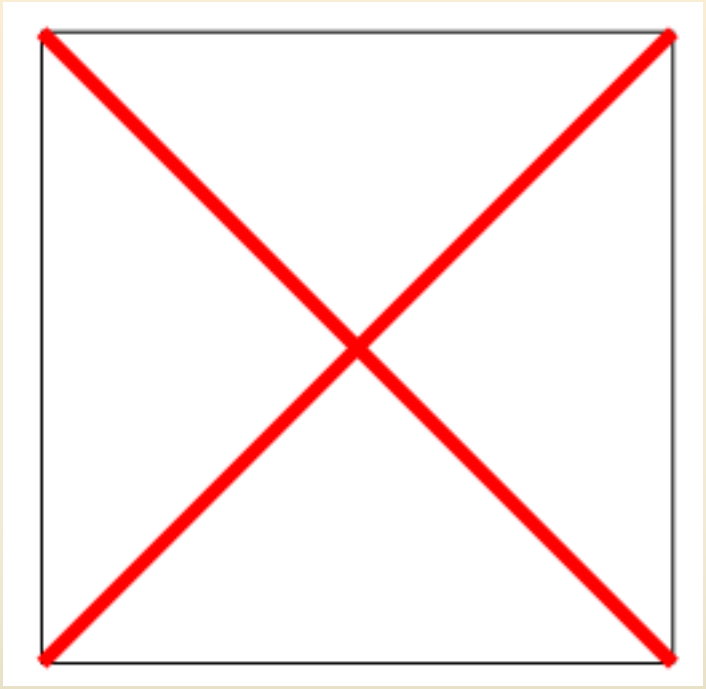


# 1. The problem of the opaque polyhedron

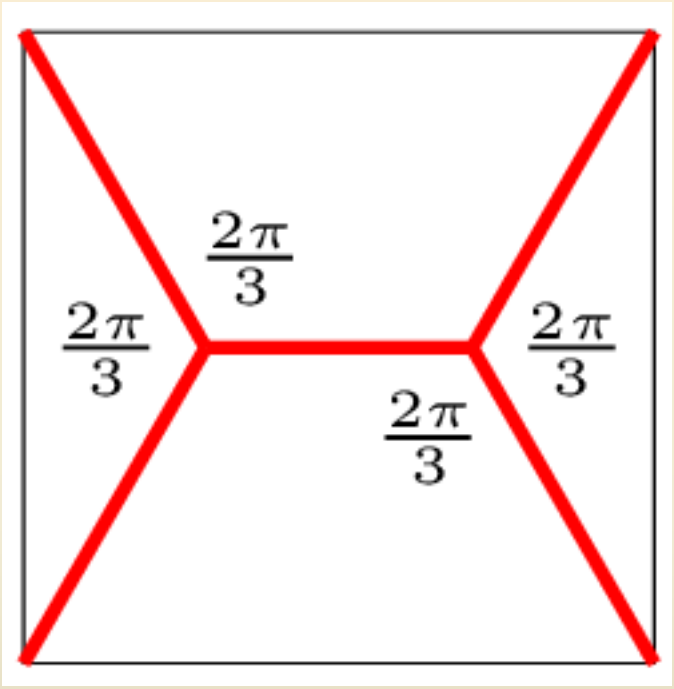


L = 3

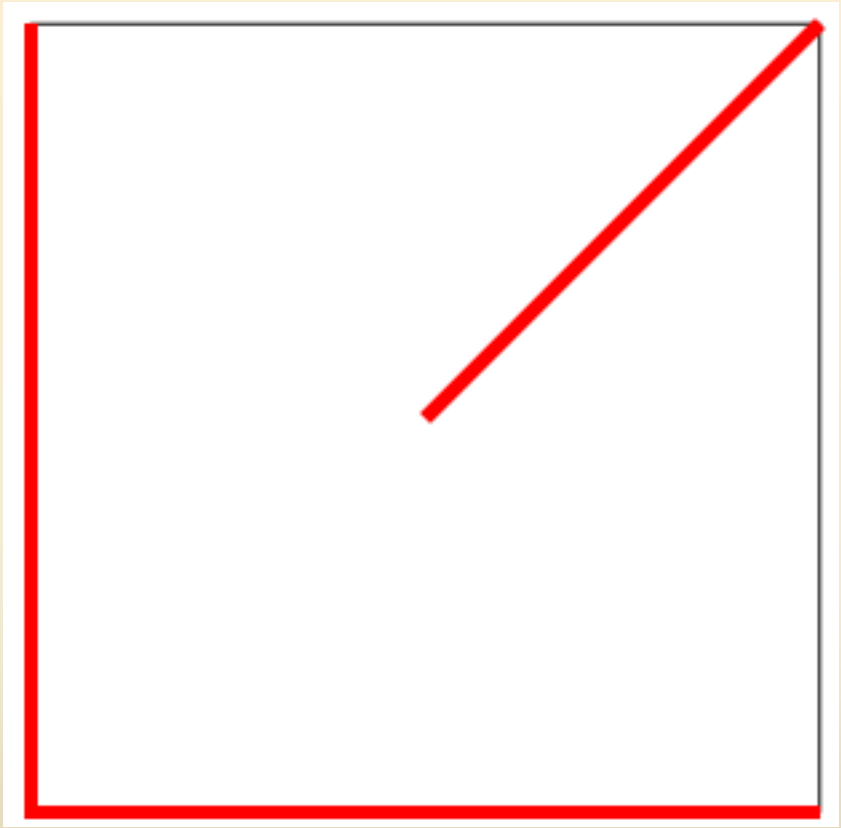


L = 3

L = 2,828

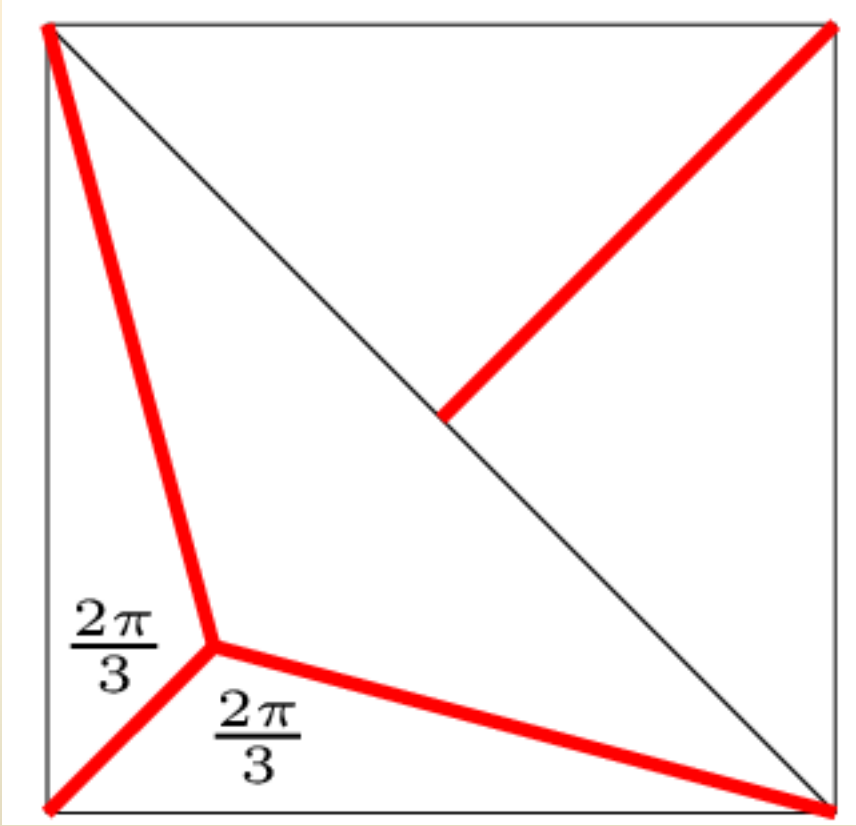



**L= 2,828** **L = 2,732**



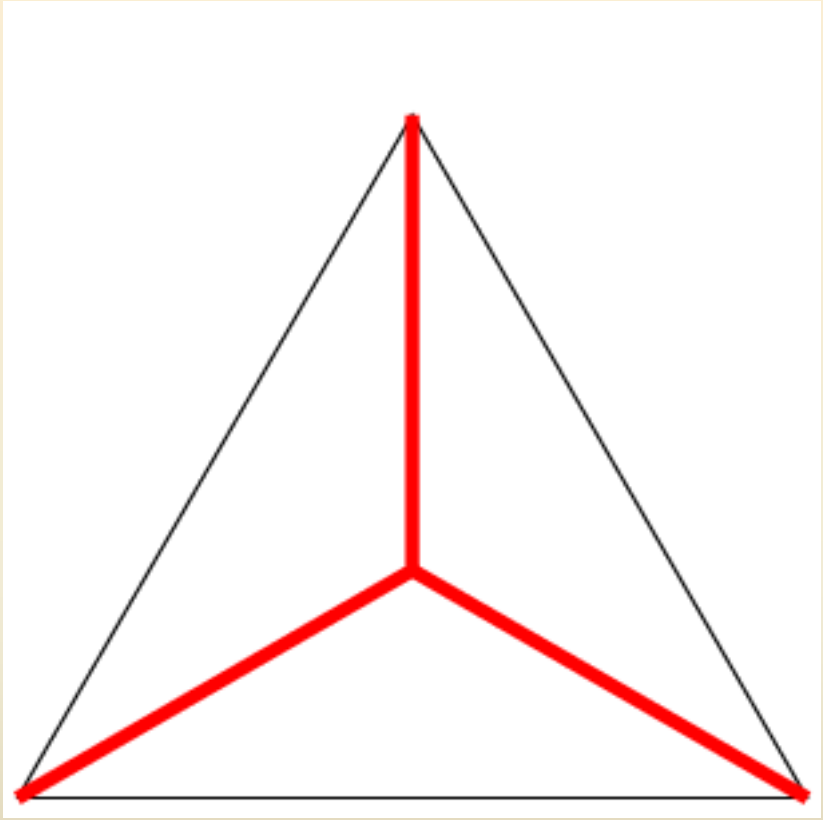
**L= 2,732**

**L = 2,707**

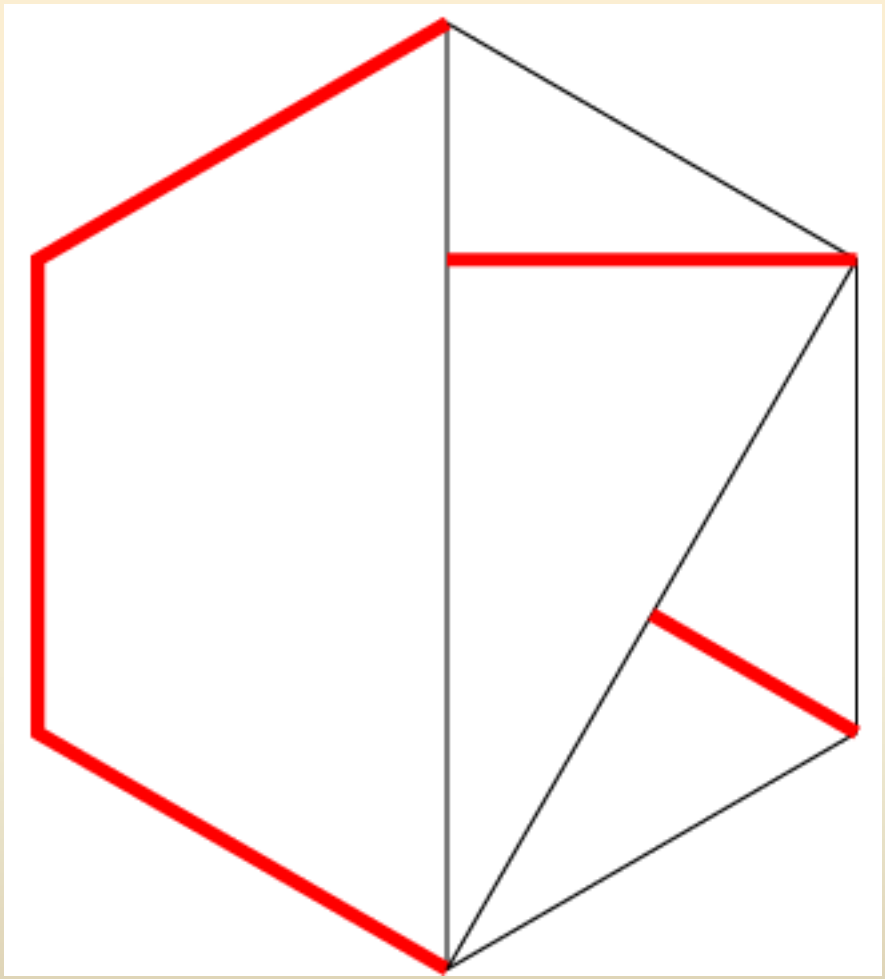



**L = 2,707**

**L = 2,639**

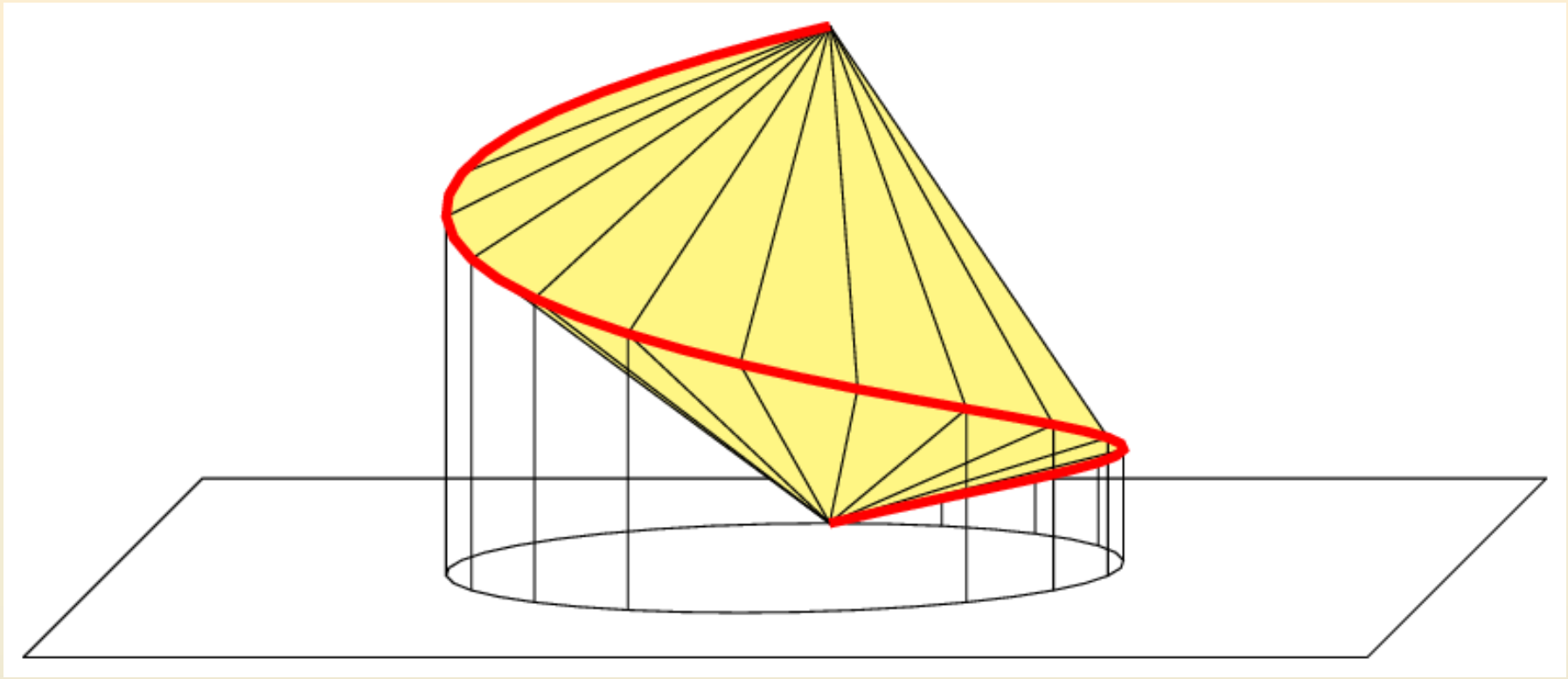


**L = 1,732**



**L = 4,366**

## 2. The problem of the frame of the largest tent in volume



$$\begin{cases} x(t) = \cos t\,; \\ y(t) = \sin t\,; \\ z(t) = \frac{t}{\sqrt{2}}, t \in [0, 2\pi]\,. \end{cases}$$

## 3. Earth monitoring trajectories of minimal lengths

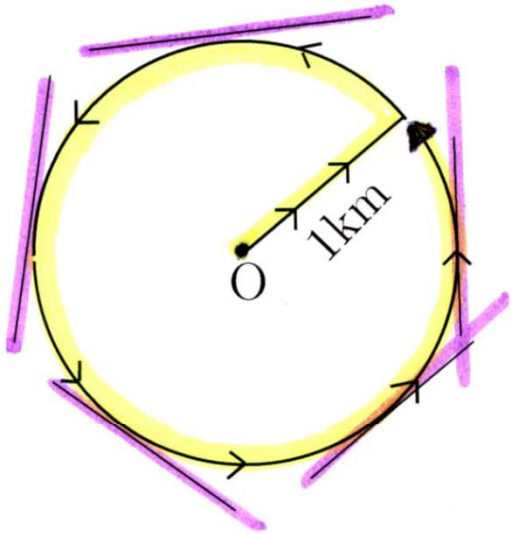



Figure 6.a.

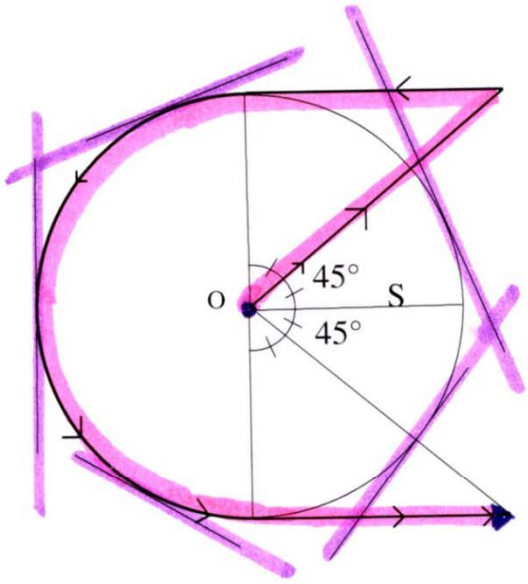



Figure 6.b.
Courbes de longueur de plus en plus petite.

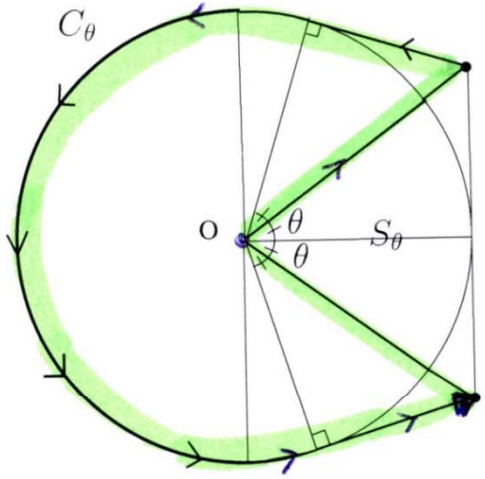
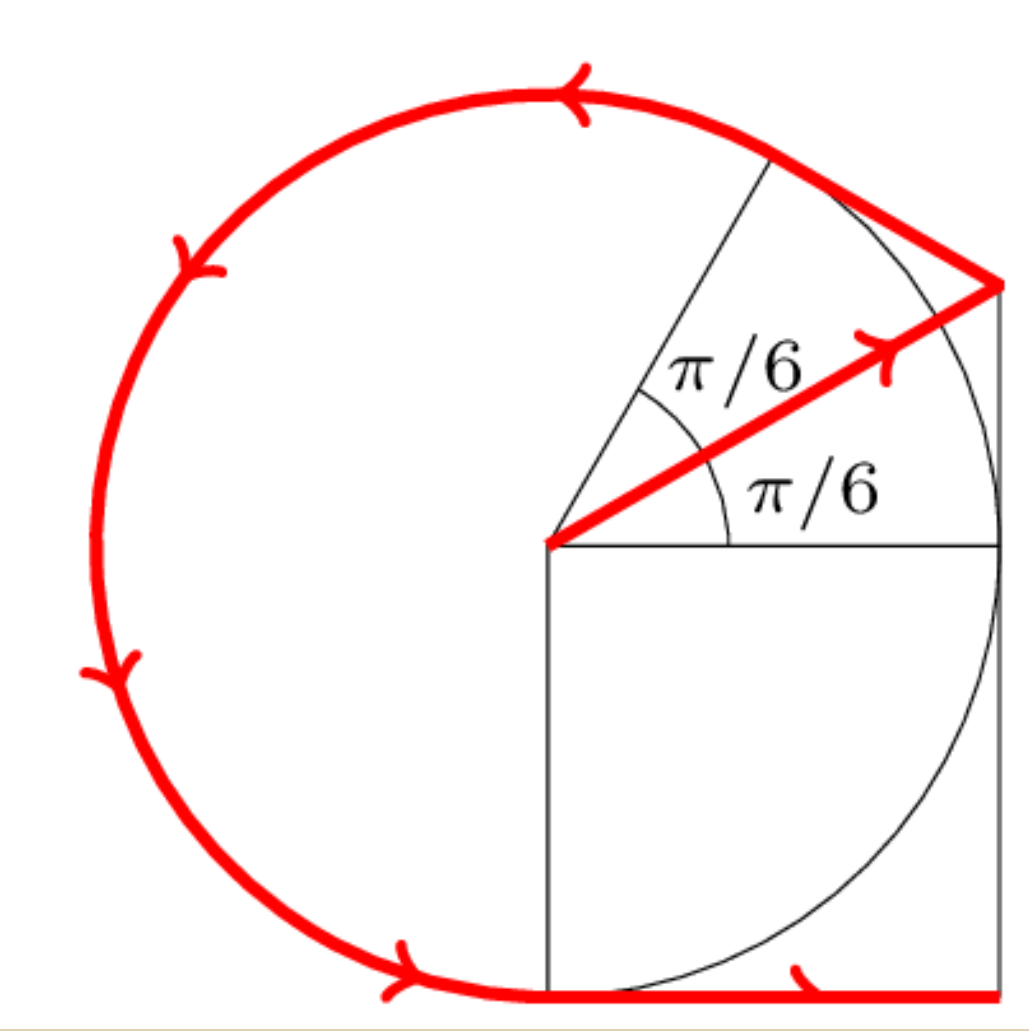


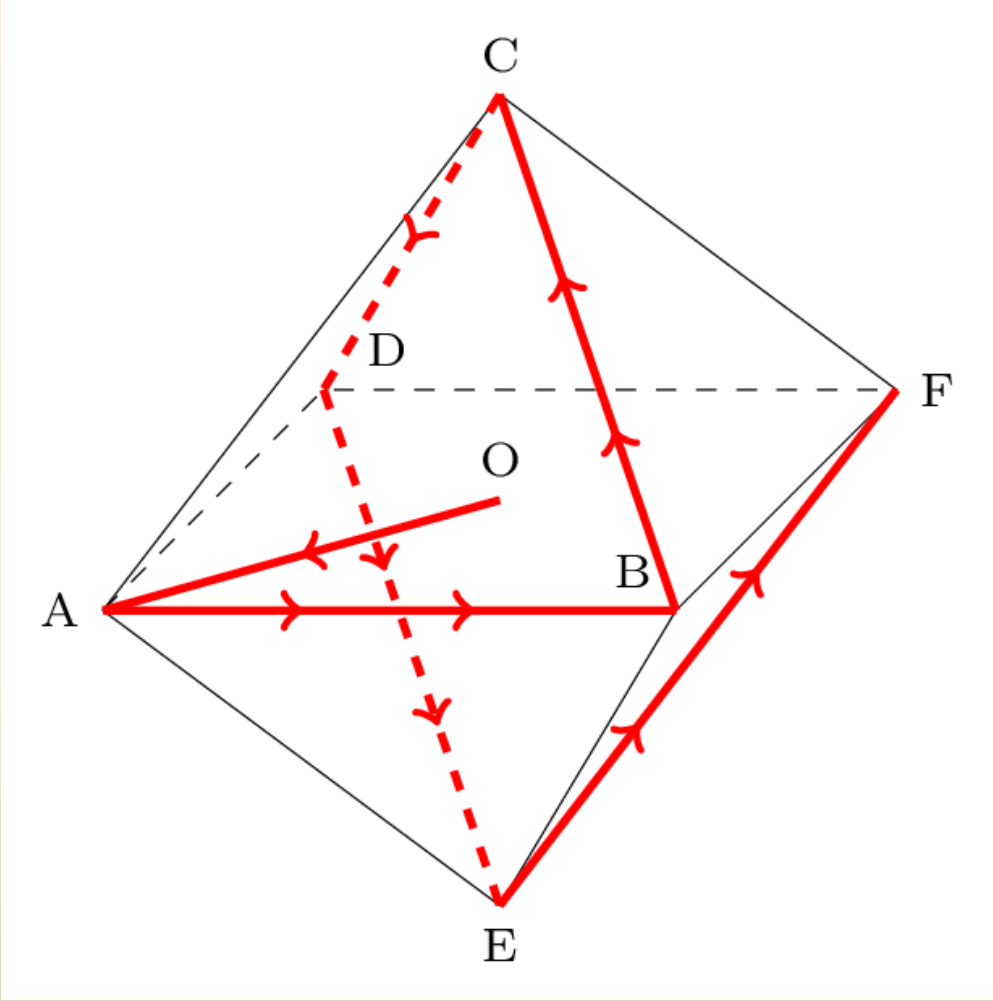

Figure 6.c.

**2D version**

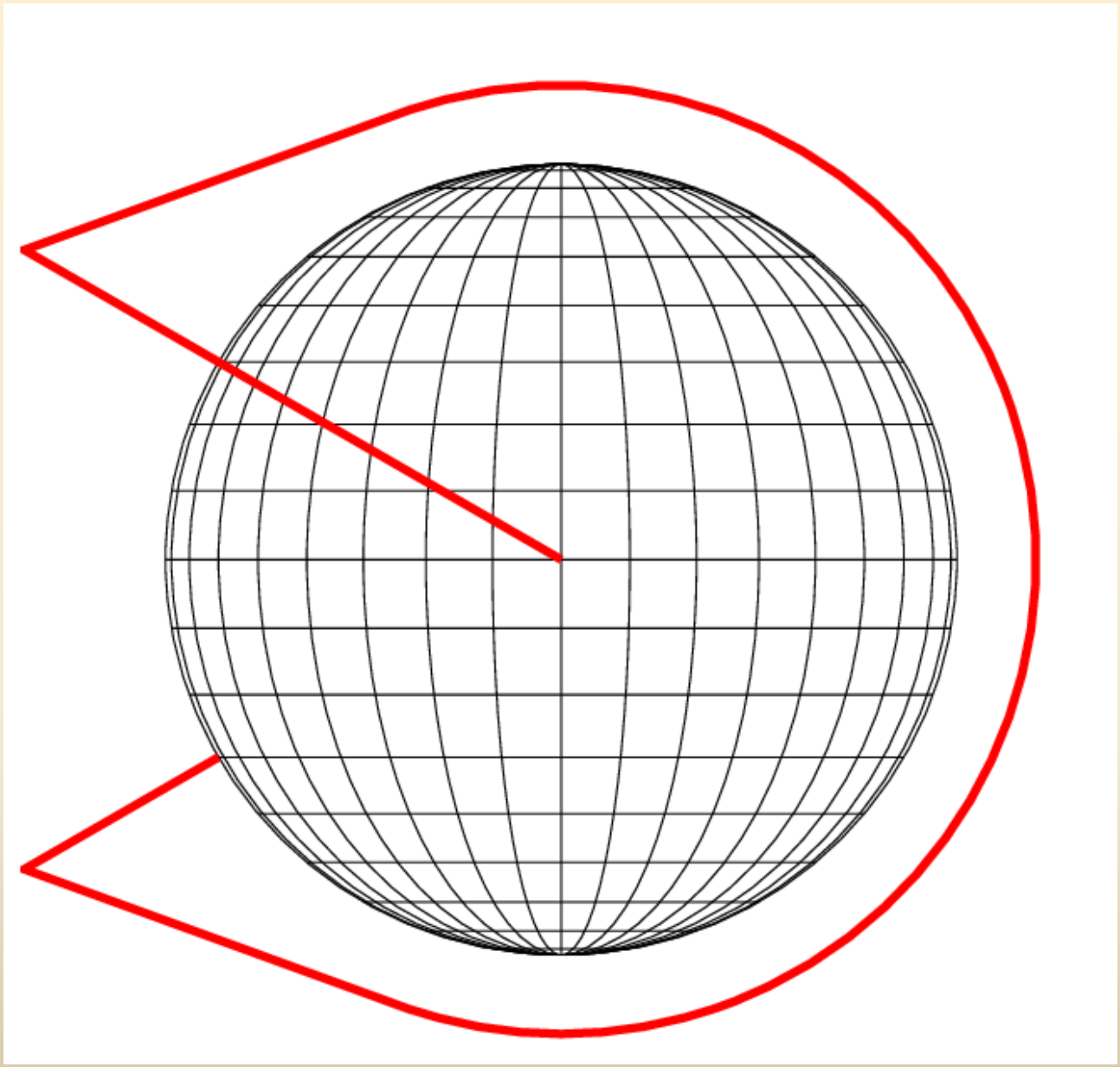


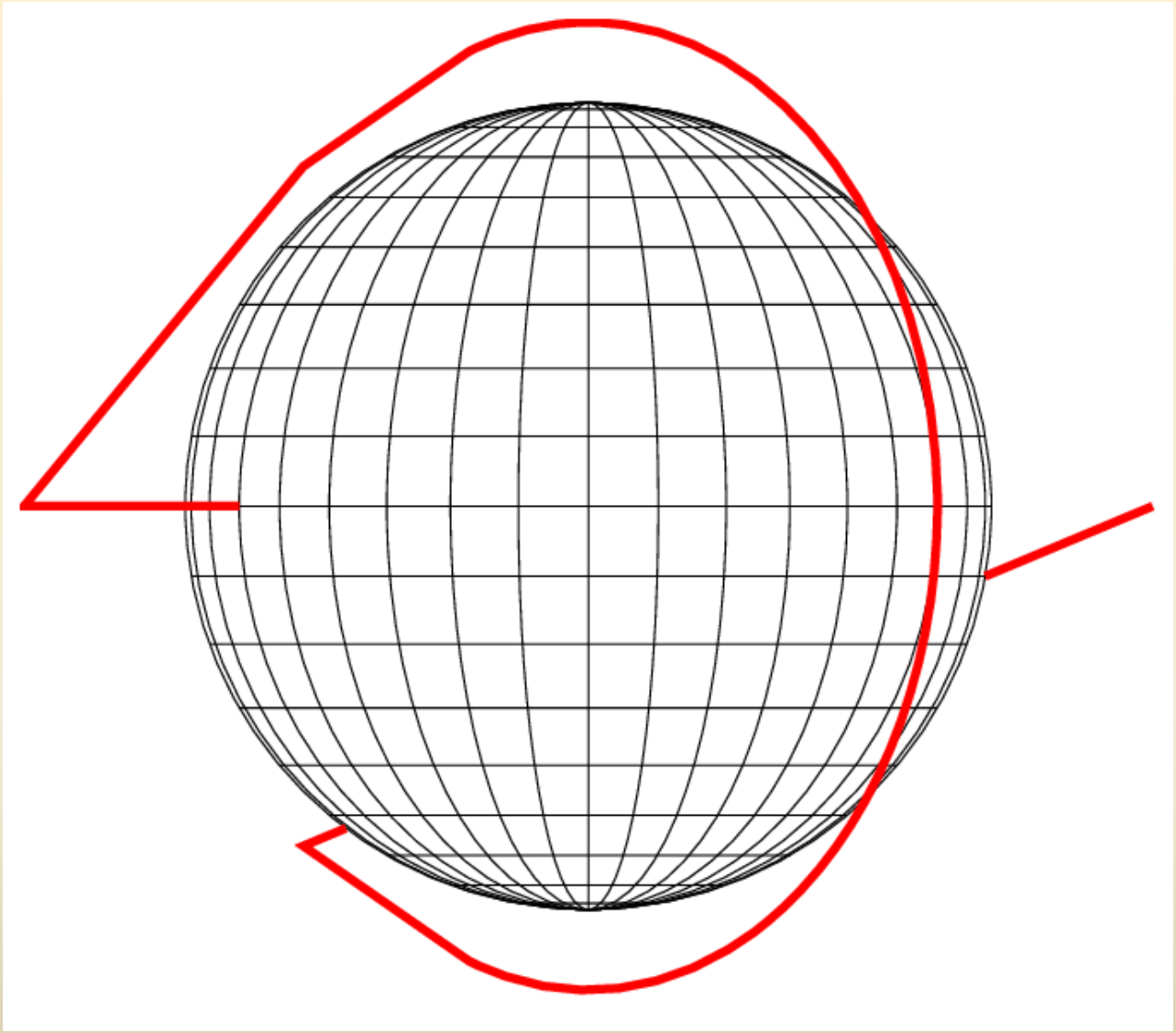

**2D version**

# 3D version




**Trajectory with only line-segments**





$L = 13{,}66\ r$

**Final variant:**

*« What is the curve (in the space) of minimal length which can be seen from any point on the sphere? »*