

Folding and unfolding cones and cylinders with Cabri 3D: how to do it and how to use it in the classroom

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ABSTRACT

As Cabri 3D does not contain tools allowing the user to open cones or cylinders (it can fold and unfold polyhedra), I have solved this problem and will first show briefly the stages of my research before presenting the modelling I have realised. I have treated this problem to respond to the demand of a middle school teacher who wanted to use it to help her students to understand some misconceptions about the unfolding of a cone. What is surprising is the consequences of this work:

1. At a research level: I have used the files I have created as tools of investigation and have discovered some unknown theorems about cones (conjectured and proven them).
2. At a teaching level: these files were used by the middle school teacher to treat the misconceptions pointed before but more than that, these files allowed me to create some experiments for the students in paper and pencil environment to conjecture some 3D properties of the intermediate stages of the unfolding of a cone.

These two points will be presented and discussed.

Keywords

Cones. Cylinders. Folding. Unfolding. Misconceptions.