

## Hyperbolas and chimneys in classroom

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### Abstract

In a second course of Mathematics, Engineering students must learn about integral calculus and its applications. Usually teachers show formulas and examples from the text book, unfortunately those examples have no meaning at all for students. So we have tried to design some didactic activities that let students to build objects with a specific form.



*Figure 1. Model of a hyperbolic chimney (used in nuclear power plants) made by a student.*

We asked students to build a chimney for a nuclear power plant. They did not have any restriction on the kind of materials they would use only for the form. Students used paper, wires, plastic, aluminium foil, plasticine and other materials to model the shape of a hyperboloid of one sheet. They had to calculate the equation by taking measures from a picture we gave them. In this work we show photos and videos of students' chimneys based on the equations they did.

### Keywords

Solid of revolution, volume, area of surface of revolution, hyperbola, integral.