POLITECNICO
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MSc. Music and Acoustic Engineering

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HL1 – Comsol Multiphysics

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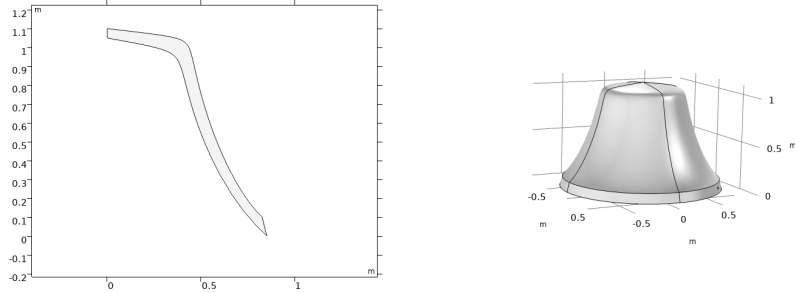# 1   Church Bell - 3D Model

1.1   Model Design

Figure 1: Bézier polygon (on the left) used as a basis for the design and the resulting rotation solid (on the right).

The modeling of the bell started with the drawing of the 2D shape seen in Fig. 1. This is a Bézier polygon, i. e. a closed curve formed by connecting line segments and Bézier curves. In our case we have two cubic Bézier curves connecting two segments, one of which marks the edge of the bell while the other coincides with the intersection of the object with its rotation axis. The actual 3D bell model is indeed obtained by rotating this figure about the $x = 0$ line, and it too can be seen in Fig. 1.