

# Baking the Optimal Cake

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## 1 Main problem

### 1.1 TL;DR

The height of the lowest cake is  $205/1263 \approx 0.162$  times the height of the cone, the height of the middle cake is  $230/1263 \approx 0.182$  times the height of the cone, and the height of the top cake is  $276/1263 \approx 0.219$  times the height of the cone. The volume of cake is  $1,119,364/1,595,169 \approx 0.702$  times the volume of the cone.

### 1.2 Proof

Let the height of the cone be  $h$  and the radius of its base be  $r$  ( $r$  will end up being irrelevant to the solution, but )