Torricelli's trumpet

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Synonym	Gabriel's horn

Torricelli's trumpet is a fictional infinitely long solid of revolution formed when the closed domain

$$A := \{(x,\, y) \in \mathbb{R}^2 \colon \ x \geq 1,\ 0 \leq y \leq \frac{1}{x}\}$$

rotates about the x-axis. It has a finite volume, π volume , but the area of its surface is infinite; in fact even the area of A is infinite, i.e., the improper integral $\int_1^\infty \frac{1}{x}\, dx$ is not convergent.

Torricelli's trumpet is surprising since it can be filled by a finite amount of paint, but this paint can never suffice for painting its surface, no matter how a coat of paint is used!