

**Omni-MATH****Problem**

A conical flask contains some water. When the flask is oriented so that its base is horizontal and lies at the bottom (so that the vertex is at the top), the water is 1 inch deep. When the flask is turned upside-down, so that the vertex is at the bottom, the water is 2 inches deep. What is the height of the cone?

**Reference answer**

$$\frac{1}{2} + \frac{\sqrt{93}}{6}$$

**Metadata**

Id: 824 · Domain: Geometry · Difficulty: 5  
· Source: HMMT 2

**Model****Model generation**

$$\frac{3+\sqrt{93}}{6} \text{ inches}$$

**Token use**

Reasoning tokens: 2048 – Output tokens: 24

**Judge**

Inputs: problem, model generation, reference answer

**Extracted final answer**

$$\frac{3+\sqrt{93}}{6} \text{ inches}$$

**Omni-Judge: Incorrect**

The student's answer,  $\left(\frac{3+\sqrt{93}}{6}\right)$  inches, does not match the reference answer. The discrepancy arises from a mistake in handling the formula or equations related to the conical flask and water depths.

The correct solution involves using similar triangles or considering the properties of cones when inverted, ultimately leading to an

expression with  $\left(\frac{1}{2} + \frac{\sqrt{93}}{6}\right)$  as the height. Since the student's answer is different from this value, it indicates that the student has not reached the same conclusion as the reference solution.

**GPT-5 mini: Correct**

The correct answer is

$1/2 + (\sqrt{93})/6 = 3/6 + (\sqrt{93})/6 = (3+\sqrt{93})/6$ , which exactly matches the response  $\frac{3+\sqrt{93}}{6}$  inches.