

Experiment ‘p5_9_cylinderSurface’ Results

December 18, 2025

Experiment outcome: SUCCESS

Bad responses: 0

Responses containing assume : 0

Resolution attempts: 1

Hard fails (resolution): 0

Soft fails (resolution): 0

Verification attempts: 1

Problem Specification

Problem name: p5_9_cylinderSurface

Natural language statement: Write a method that computes the surface area of a cylinder with a circular base, given radius and height.

Method signature: p5_9_cylinderSurface(r: real, h: real) returns (surface_area: real)

Ensures

- $\text{surface_area} == 2.0 * 3.14159 * r * (r + h)$

GenAI interactions

Below you will find all interactions between the ‘user’ (program) and the ‘assistant’ (OpenAI).

Program → GenAI

You are given the following task to perform in Dafny:

Write a method that computes the surface area of a cylinder with a circular base, given
↪ radius and height.

The signature should be:

```
method p5_9_cylinderSurface(r: real, h: real) returns (surface_area: real)
```

The method should respect the following contract:

```
ensures surface_area == 2.0 * 3.14159 * r * (r + h)
```

Produce and show only the Dafny body of this method, including the curly braces that
↪ surround it. Do not show the signature nor contract. You must not use 'assume'
↪ anywhere in your code.

GenAI → Program

System fingerprint:

ID: chatcmpl-Co4y2AZAprfoMdGRfHIba6no2xHGQ

Model: gpt-5.1-chat-latest

Created at: 1766051530

Finish reason: stop

Usage: 302 tokens in, and 43 tokens out

```
{  
  surface_area := 2.0 * 3.14159 * r * (r + h);  
}
```

Final Program

```
method p5_9_cylinderSurface(r: real, h: real) returns (surface_area: real)  
  ensures surface_area == 2.0 * 3.14159 * r * (r + h)  
{  
  surface_area := 2.0 * 3.14159 * r * (r + h);  
}
```

Total Token Usage

Input tokens: 302

Output tokens: 43

Reasoning tokens: 0

Sum of ‘total tokens’: 345

Experiment Timings

Overall Experiment started at 1766051532405, ended at 1766051534870, lasting 2465ms (2.47 seconds)

Iteration #1 started at 1766051532405, ended at 1766051534870, lasting 2465ms (2.47 seconds)