

Experiment ‘p5_9_sphereSurface’ 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_sphereSurface

Natural language statement: Write a method that computes the surface of a sphere given its radius.

Method signature: p5_9_sphereSurface(r: real) returns (surface_area: real)

Ensures

- `surface_area == 4.0 * 3.14159 * r * r`

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 of a sphere given its radius.

The signature should be:

```
method p5_9_sphereSurface(r: real) returns (surface_area: real)
```

The method should respect the following contract:

```
ensures surface_area == 4.0 * 3.14159 * r * r
```

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-Co4xvh9zZi0t2wUo7oOxo9XlTr1Va

Model: gpt-5.1-chat-latest

Created at: 1766051523

Finish reason: stop

Usage: 274 tokens in, and 40 tokens out

```
{  
    surface_area := 4.0 * 3.14159 * r * r;  
}
```

Final Program

```
method p5_9_sphereSurface(r: real) returns (surface_area: real)  
    ensures surface_area == 4.0 * 3.14159 * r * r  
{  
    surface_area := 4.0 * 3.14159 * r * r;  
}
```

Total Token Usage

Input tokens: 274

Output tokens: 40

Reasoning tokens: 0

Sum of ‘total tokens’: 314

Experiment Timings

Overall Experiment started at 1766051525425, ended at 1766051527904, lasting 2479ms (2.48 seconds)
Iteration #1 started at 1766051525425, ended at 1766051527903, lasting 2478ms (2.48 seconds)