

OpenGeoProver Output for conjecture “Pythagoras’ theorem”

Wu’s method used

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1 Validation of Construction Protocol

Construction steps:

- Free point C
- Free point A
- Line b through two points A and C
- Line a through point C perpendicular to line b
- Random point B from line a

Theorem statement:

- Linear combination of squares of segments: $1.0 \cdot \text{sqr}(AB) - 1.0 \cdot \text{sqr}(BC) - 1.0 \cdot \text{sqr}(CA)$ equals zero

Validation result: Construction protocol is valid.

2 Transformation of Construction Protocol to algebraic form

Transformation of Construction steps

2.1 Transformation of point C:

- Point C has been assigned following coordinates: $(0, 0)$

2.2 Transformation of point A:

- Point A has been assigned following coordinates: $(0, u_1)$

2.3 Transformation of point B:

- Point B has been assigned following coordinates: (u_2, x_1)
- Polynomial that point B has to satisfy is:

$$p = x_1$$

- Processing of polynomial

$$p = x_1$$

Info: Will try to rename Y coordinate of point B

Info: Y coordinate of point B renamed by zero

- Point B has been renamed. Point B has been assigned following coordinates: $(u_2, 0)$

Transformation of Theorem statement

- Polynomial for theorem statement:

$$p = 0$$

Time spent for transformation of Construction Protocol to algebraic form

- 0.01 seconds

3 Invoking the theorem prover

The used proving method is Wu's method.

The system is already triangular.

Failed reading of NDG Conditions.

4 Final Remainder

4.1 Final remainder for conjecture Pythagoras' theorem

Calculating final remainder of the conclusion:

$$g = 0$$

with respect to the triangular system.

5 Prover results

Status: Theorem has been proved.

Space Complexity: The biggest polynomial obtained during prover execution contains 0 terms.

Time Complexity: Time spent by the prover is 0.0 seconds.

6 NDG Conditions

NDG Conditions in readable form

- There are no NDG conditions for this theorem