

Understanding the Pythagoras Theorem

Chapter 9: The Baudhayana–Pythagoras Theorem · Topic 1

Key Concept

For a right triangle with legs of length 3 and 4, the hypotenuse is calculated as $\sqrt{3^2+4^2} = \sqrt{9+16} = \sqrt{25} = 5$ — this specific 3-4-5 combination is called a 'Pythagorean triple' since all three values are whole numbers. This theorem, attributed to the ancient Greek mathematician Pythagoras (though known earlier in other cultures, including ancient India's Baudhayana), remains one of the most useful and widely applied results in all of mathematics.

Quick Revision Notes

- Pythagoras theorem: $a^2 + b^2 = c^2$, where c is the hypotenuse of a right triangle.
- Example: legs 3 and 4 give hypotenuse $\sqrt{9+16}=\sqrt{25}=5$ (the 3-4-5 Pythagorean triple).
- The theorem applies only to right-angled triangles.
- Known in ancient India (Baudhayana) as well as by the Greek mathematician Pythagoras.

Practice Questions

- 1 Verify if a triangle with sides 5,12,13 is a right triangle.
- 2 Find the hypotenuse of a right triangle with legs 9cm and 12cm.
- 3 Name another Pythagorean triple besides 3-4-5.