c = 5

Therefore, the length of the hypotenuse is 5 units.

The Pythagorean theorem has many practical applications in fields such as engineering, physics, and surveying. It is also a fundamental concept in geometry and is often used in higher-level math courses.

Quadratic formula

The quadratic formula is a formula used to find the roots or solutions of a quadratic equation, which is a second-degree polynomial equation. A quadratic equation is of the form:

$ax^2 + bx + c = 0$

where x is the variable, and a, b, and c are constants (with a not equal to 0).

The quadratic formula gives us the values of x that satisfy the quadratic equation:

$x = (-b \pm \sqrt{b^2 - 4ac}) / 2a$

where sqrt denotes the square root function.

Bayes' theorem

Bayes' theorem is a fundamental concept in probability theory and statistics that allows us to update the probability of a hypothesis based on new evidence. It is named after Reverend Thomas Bayes, an 18th-century British mathematician and theologian.

The theorem states that the probability of a hypothesis H given some observed evidence E is proportional to the product of the probability of the evidence given the hypothesis and the prior probability of the hypothesis:

$$P(H|E) = P(E|H) * P(H) / P(E)$$

where P(H|E) is the posterior probability of the hypothesis given the evidence, P(E|H) is the likelihood of the evidence given the hypothesis, P(H) is the prior probability of the hypothesis, and P(E) is the probability of the evidence.

Bayes' theorem allows us to update our belief in a hypothesis based on new evidence. The likelihood ratio P(E|H) is the relative probability of observing the evidence under the hypothesis compared to the probability of observing the evidence under some other hypothesis. The prior probability P(H) represents our initial belief in the hypothesis before observing any evidence. The denominator P(E) is the normalizing constant that ensures that the posterior probabilities add up to 1.