W Mean

Mean

Arithmetic-geometric mean Arithmetic-harmonic mean Cesàro mean Chisini mean Contraharmonic mean Elementary symmetric mean Geometric-harmonic mean Grand mean Heinz mean Heronian

A mean is a quantity representing the "center" of a collection of numbers and is intermediate to the extreme values of the set of numbers. There are several kinds of means (or "measures of central tendency") in mathematics, especially in statistics. Each attempts to summarize or typify a given group of data, illustrating the magnitude and sign of the data set. Which of these measures is most illuminating depends on what is being measured, and on context and purpose.

The arithmetic mean, also known as "arithmetic average", is the sum of the values divided by the number of values. The arithmetic mean of a set of numbers x1, x2, ..., xn is typically denoted using an overhead bar,

x

–

...

Generalized mean

mean as M p (x 1 , … , x n) = (? i = 1 n w i x i p ? i = 1 n w i) 1 / p {\displaystyle M_{p}(x_{1},\dots ,x_{n})=\left({\frac {\sum _{i=1}^{n}w_{i}x_{i}^{p}}{\sum

In mathematics, generalized means (or power mean or Hölder mean from Otto Hölder) are a family of functions for aggregating sets of numbers. These include as special cases the Pythagorean means (arithmetic, geometric, and harmonic means).

Harmonic mean

arguments. The harmonic mean is the reciprocal of the arithmetic mean of the reciprocals of the numbers, that is, the generalized f-mean with f (x) = 1 x

In mathematics, the harmonic mean is a kind of average, one of the Pythagorean means.

It is the most appropriate average for ratios and rates such as speeds, and is normally only used for positive arguments.

The harmonic mean is the reciprocal of the arithmetic mean of the reciprocals of the numbers, that is, the generalized f-mean with

f

(

x

)

=

1

x

{\displaystyle f(x)={\frac {1}{x}}}

. For example, the harmonic mean of 1, 4, and 4 is

(

1

?

1...

Arithmetic mean

mathematics and statistics, the arithmetic mean (/?ær???m?t?k/ arr-ith-MET-ik), arithmetic average, or just the mean or average is the sum of a collection

In mathematics and statistics, the arithmetic mean (arr-ith-MET-ik), arithmetic average, or just the mean or average is the sum of a collection of numbers divided by the count of numbers in the collection. The collection is often a set of results from an experiment, an observational study, or a survey. The term "arithmetic mean" is preferred in some contexts in mathematics and statistics because it helps to distinguish it from other types of means, such as geometric and harmonic.

Arithmetic means are also frequently used in economics, anthropology, history, and almost every other academic field to some extent. For example, per capita income is the arithmetic average of the income of a nation's population.

While the arithmetic mean is often used to report central tendencies, it is not a robust...

Mean value theorem

In mathematics, the mean value theorem (or Lagrange's mean value theorem) states, roughly, that for a given planar arc between two endpoints, there is

In mathematics, the mean value theorem (or Lagrange's mean value theorem) states, roughly, that for a given planar arc between two endpoints, there is at least one point at which the tangent to the arc is parallel to the secant through its endpoints. It is one of the most important results in real analysis. This theorem is used to prove statements about a function on an interval starting from local hypotheses about derivatives at points of the interval.

Mean motion

In orbital mechanics, mean motion (represented by n) is the angular speed required for a body to complete one orbit, assuming constant speed in a circular

In orbital mechanics, mean motion (represented by n) is the angular speed required for a body to complete one orbit, assuming constant speed in a circular orbit which completes in the same time as the variable speed, elliptical orbit of the actual body. The concept applies equally well to a small body revolving about a large, massive primary body or to two relatively same-sized bodies revolving about a common center of mass. While nominally a mean, and theoretically so in the case of two-body motion, in practice the mean motion is not typically an average over time for the orbits of real bodies, which only approximate the two-body assumption. It is rather the instantaneous value which satisfies the above conditions as calculated from the current gravitational and geometric circumstances of...

Weighted arithmetic mean

The weighted arithmetic mean is similar to an ordinary arithmetic mean (the most common type of average), except that instead of each of the data points

The weighted arithmetic mean is similar to an ordinary arithmetic mean (the most common type of average), except that instead of each of the data points contributing equally to the final average, some data points contribute more than others. The notion of weighted mean plays a role in descriptive statistics and also occurs in a more general form in several other areas of mathematics.

If all the weights are equal, then the weighted mean is the same as the arithmetic mean. While weighted means generally behave in a similar fashion to arithmetic means, they do have a few counterintuitive properties, as captured for instance in Simpson's paradox.

Geometric mean

In mathematics, the geometric mean (also known as the mean proportional) is a mean or average which indicates a central tendency of a finite collection

In mathematics, the geometric mean (also known as the mean proportional) is a mean or average which indicates a central tendency of a finite collection of positive real numbers by using the product of their values (as opposed to the arithmetic mean, which uses their sum). The geometric mean of ?

n

{\displaystyle n}

? numbers is the nth root of their product, i.e., for a collection of numbers a1, a2, ..., an, the geometric mean is defined as

a

1

a

2

?

a...

Sample mean and covariance

The sample mean (sample average) or empirical mean (empirical average), and the sample covariance or empirical covariance are statistics computed from

The sample mean (sample average) or empirical mean (empirical average), and the sample covariance or empirical covariance are statistics computed from a sample of data on one or more random variables.

The sample mean is the average value (or mean value) of a sample of numbers taken from a larger population of numbers, where "population" indicates not number of people but the entirety of relevant data, whether collected or not. A sample of 40 companies' sales from the Fortune 500 might be used for convenience instead of looking at the population, all 500 companies' sales. The sample mean is used as an estimator for the population mean, the average value in the entire population, where the estimate is more likely to be close

to the population mean if the sample is large and representative. The...

Mean effective pressure

The mean effective pressure (MEP) is a quantity relating to the operation of a reciprocating engine and is a measure of an engine's capacity to do work

The mean effective pressure (MEP) is a quantity relating to the operation of a reciprocating engine and is a measure of an engine's capacity to do work that is independent of engine displacement. Despite having the dimension of pressure, MEP cannot be measured. When quoted as an indicated mean effective pressure (IMEP), it may be thought of as the average pressure acting on a piston during the different portions of its cycle. When friction losses are subtracted from the IMEP, the result is the brake mean effective pressure (BMEP).