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Method of moments - Examples

Very simple!

The method of moments is based on the assumption that the sample moments are good estimates of the corresponding population moments.

Definition:

Population moments	Sample moments
$EX = \mu$ is the first population moment	$\bar{X} = \frac{1}{n} \sum_{i=1}^{n} X_i$ is the first sample moment.
	$\frac{1}{n}\sum_{i=1}^{n}X_i^2$ is the second sample moment.
:	:
:	:
EX^k is the kth population moment	$\frac{1}{n}\sum_{i=1}^{n}X_{i}^{k}$ is the kth sample moment.

Therefore, A-Signment emitting Ex Example moment.

Signal E is a good estimator of EX^2 , etc.

Example 1: https://powcoder.com Suppose X_1, X_2, \dots, X_n is a random sample from a Poisson distribution with mean λ . Find

the moment estimator of λ .

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Example 2:

Let X follow the uniform distribution on the interval $(0, \theta)$, and X_1, X_2, \dots, X_n denote i.i.d. random variables from this distribution. Find the method of moments estimator of θ .

Example 3	3:
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If X_1, X_2, \dots, X_n denotes a random sample from $N(\mu, \sigma)$, find the method of moments estimators of μ and σ^2 .

Example 4 Ssignment Project Exam Help If X_1, X_2, \dots, X_n denotes a random sample from $N(0, \sigma)$, find the method of moments estimators of σ^2 .

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Example 5:

Let X_1, \dots, X_n denote a random sample from the probability density function $f(x; \theta) = (\theta + 1)x^{\theta}$, 0 < x < 1, $\theta > -1$. Find the method of moments estimator of θ .