

Ασκήσεις Στατιστικής (Μέθοδος Ροπών)

1	<p>Example 11 Let X_1, X_2, \dots, X_n represent a random sample of service times of n customers at a certain facility, where the underlying distribution is assumed exponential with parameter λ. Use the method of moment to find $\hat{\lambda}$.</p>
2	<p>Example 12 Let X denote the main memory requirement of a job as a fraction of the total user-allocatable main memory of a computing center. We suspect that the density function of X has the form:</p> $f(x) = \begin{cases} (k+1)x^k & 0 < x < 1, k > 0 \\ 0 & \text{otherwise} \end{cases}$ <p>Use the method of moments to find \hat{k}. (Μπορείτε να αγνοήσετε την πρώτη πρόταση αν δεν την καταλαβαίνετε και να πάρετε απλά την πυκνότητα που δίνεται.)</p>
3	<p>Exercise 2.11. Let $\mathbf{Y} = (Y_1, \dots, Y_n)^T$ be a random sample from the distribution with the pdf given by</p> $f(y; \vartheta) = \begin{cases} \frac{2}{\vartheta^2}(\vartheta - y), & y \in [0, \vartheta], \\ 0, & \text{elsewhere.} \end{cases}$ <p>Find an estimator of ϑ using the Method of Moments.</p>
4	<p>Let X_1, \dots, X_n be a random sample from a uniform distribution on the interval $[a, b]$. Obtain method of moment estimators for a and b.</p>
5	<p>Let X_1, \dots, X_n be a random sample from the truncated exponential distribution with pdf</p> $f(x) = \begin{cases} e^{-(x-\theta)}, & x \geq \theta \\ 0, & \text{otherwise.} \end{cases}$ <p>Find the method of moments estimate of θ.</p>
6	<p>Let X_1, \dots, X_n be a random sample from a distribution with pdf</p> $f(x, \alpha) = \frac{1 + \alpha x}{2}, \quad -1 \leq x \leq 1, \text{ and } -1 \leq \alpha \leq 1.$ <p>Find the moment estimators for α.</p>
7	<p>Let X_1, \dots, X_n be a random sample from a population with pdf</p> $f(x) = \begin{cases} \frac{2\alpha^2}{x^3}, & x \geq \alpha \\ 0, & \text{otherwise.} \end{cases}$ <p>Find a method of moments estimator for α.</p>