PRMIA

8007 Exam

Mathematical Foundations of Risk Measurement

Version: 4.1

Question: 1

Suppose 60% of capital is invested in asset 1, with volatility 40% and the rest is invested in asset 2, with volatility 30%. If the two asset returns have a correlation of -0.5, what is the volatility of the portfolio?

A. 36%
B. 36.33%
C. 26.33%
D. 20.78%

Answer: D

Question: 2

Concerning a standard normal distribution and a Student's t distribution (with more than four degrees of freedom), which of the following is true?

A. The distributions have the same kurtosis.
B. The normal distribution has higher kurtosis than the t distribution.
C. The normal distribution has lower kurtosis than the t distribution.
D. Which has the higher kurtosis depends on the degrees of freedom of the t distribution.

Answer: C

Question: 3

You work for a brokerage firm that charges its client x per share. The volume of trade of a client of type A depends on the per share commission in the following manner. If the commission is x, the client of type A will trade e-ax shares on average each week. What is the optimal commission x that maximizes the income from client A, noting that a is greater than zero?

A. 1
B. a
C. 42
D. a2

Answer: C

Question: 4

If the annual volatility of returns is 25% what is the variance of the quarterly returns?

A. 0.1250
B. 0.0156
C. 0.0625
D. None of the above

Answer: B

Question: 5

You are to perform a simple linear regression using the dependent variable Y and the independent variable X (Y = a + bX). Suppose that cov(X,Y)=10, var(X)= 5, and that the mean of X is 1 and the mean of Y is 2. What are the values for the regression parameters a and b?

A. b=0.5, a=2.5
B. b=0.5, a=1.5
C. b=2, a=4
D. b=2, a=0

Answer: D

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