University of Texas at Austin

Quiz #21

Required returns. CAPM assumptions.

Provide your **complete solutions** to the following problems:

Problem 21.1. (9 points) State the assumptions of the **Capital Asset Pricing Model.**

Problem 21.2. (2 points) You are given the following information about stock X and a portfolio P:
- The annual effective risk-free rate is 4%.
- The portfolio's expected return is 0.08 and the its volatility is 0.25.
- The expected return of stock X is 6% and its volatility is 0.4.
- The correlation between the returns of stock X and the portfolio P is -0.2.

Then, the investor holding portfolio P should invest in stock X. *True or false? Why?*

Problem 21.3. (2 points) Portfolio P has expected return 0.08 and volatility equal to 12%. Porfolio Q has expected return 0.10 and volatility equal to 12.5%. Then, we can say with certainty that portfolio P is not efficient.*True or false? Why?*

Problem 21.4. (2 points) You are given the following information about stock X and a portfolio P:
- The annual effective risk-free rate is 3%.
- The portfolio's expected return is 0.10 and the its volatility is 0.20.
- The expected return of stock X is 0.06 and its volatility is 0.30.
- The correlation between the returns of stock X and the portfolio P is -0.25.

Then, the investor holding portfolio P should invest in stock X. *True or false? Why?*