Portfolio analysis- class exercise.

1. An investor has the utility of wealth function U (W) = $400W - 2W^2$.

    a) Sketch this utility of wealth function.
    b) This function is only meaningful for which range of wealth? Why is it not meaningful outside this range?
    c) What type of investor is this (in terms of attitude to risk)? Prove it!

    d) What would happen to this investor's required return (for investing in a share) if the volatility of the expected returns increased?

2. The stock market consists of two shares (!). Share A has an expected return of 10%, and a standard deviation of 15%. Share B has an expected return of 15%, and a standard deviation of 20%. The covariance between share A and share B is 0.002. What is the portfolio's expected return and standard deviation for the following combinations of share A and share B?
    a) 100% in share A, 0% in share B.
    b) 80% in share A, 20% in share B.
    c) 60% in share A, 40% in share B.
    d) 40% in share A, 60% in share B.
    e) 20% in share A, 80% in share B.
    f) 0% in share A, 100% in share B.

Sketch the investor's opportunity set, and identify the efficiency frontier.

This economy also has a risk-free asset of 5% . Sketch the capital market line.
On your diagram, identify the market portfolio. Which portfolio should all risk averse investors hold? In holding this portfolio, which risk has been eliminated, and which risk remains?

3. CAPM: A share has a current price of £55. Exactly a year ago, it traded at £50. No dividends have been paid in this period. What is the annual actual % return?

Which risk are investors rewarded for holding? Which risk are they not rewarded for holding?
An economy has a risk free rate of 5%. The expected return on the market is 10%. Share X has a beta of 0.8. Share Y has a beta of 1.5.

a) What is the expected return for share X and for share Y?
b) Sketch the security market line. What is the required return on an asset with beta of zero? on an asset with beta of 1?
c) What do investors require (expect) as a return to induce them to invest in share X or share Y?
d) Investors expect share X to trade at £120 and share Y to trade at £150 next period. What is today's equilibrium share price for share X and share Y?
e) Share A and share B have the same expected share price next period. Share B is riskier than share A (in terms of higher beta). Which share has the lower current equilibrium price? Why do investors pay less for this share?