Problem set: Hand in 1.

Exercise 1.

[1]

_____ are financial assets.
A) Bonds
B) Machines
C) Stocks
D) A and C
E) A, B and C

Exercise 2.

[1]

The organized exchanges are examples of _____.
A) auction markets
B) continuous markets
C) secondary markets
D) A and B
E) A, B, and C

Exercise 3.

[3]

In the event of the firm's bankruptcy
A) the most shareholders can lose is their original investment in the firm's stock.
B) common shareholders are the first in line to receive their claims on the firm's assets.
C) bondholders have claim to what is left from the liquidation of the firm's assets after paying the shareholders.
D) the claims of preferred shareholders are honored before those of the common shareholders.
E) A and D.

Exercise 4.

[3]

You sell short 100 shares of Loser Co. at a market price of $45 per share. Your maximum possible loss is

A) $4500
B) unlimited
C) zero
D) $9000
E) cannot tell from the information given

Exercise 5.

[3]

You purchased a share of stock for $20. One year later you received $1 as dividend and sold the share for $29. What was your holding period return?

A) 45%
B) 50%
C) 5%
D) 40%
E) none of the above

Exercise 6.

[5]

Toyco stock has the following probability distribution of expected prices one year from now:

State	Probability	Price
1	25%	$ 50
2	40%	$ 60
3	35%	$ 70

If you buy Toyco today for $55 and it will pay a dividend during the year of $4 per share, what is your expected holding period return on Toyco?

A) 7.27%
B) 18.18%
C) 10.91%
D) 16.36%
E) 9.09%

Exercise 7.

[3]

You purchased a share of stock for $120. One year later you received $1.82 as dividend and sold the share for $136. What was your holding period return?

A) 14.85%
B) 22.12%
C) 15.67%
D) 13.24%
E) none of the above

Exercise 8.

[Easy]
Discuss why common stocks must earn a risk premium.

Exercise 9.

[Moderate]

Discuss how the investor can use the separation theorem and utility theory to produce an efficient portfolio suitable for the investor's level of risk tolerance.

Exercise 10.

OBX stocks- correlations

In class you saw the correlation structure of the fifteen largest stocks in the OBX index. In this exercise you are asked to do the same exercise, but for the five lowest ranked stocks.

Specifically, the OBX consists of the following twenty five stocks: EQNR.OL, DNB.OL, AKRBP.OL, NHY.OL, YAR.OL, TEL.OL, MOWI.OL, ORK.OL, TOM.OL, STB.OL, KOG.OL, NOD.OL, SALM.OL, SUBC.OL, NEL.OL, VAR.OL, AUTO.OL, SCHA.OL, FRO.OL, KAHOT.OL, GOGL.OL, MPCC.OL, NAS.OL, RECSI.OL, PGS.OL

For the five last of these, download stock prices for the period 2016–2022, construct the time series of monthly returns, and calculate the estimated correlations between these five stocks. Show the table of correlations in a similar format to that shown in class.

In your solution include an appendix with your R code.

Exercise 11.

You have been given this probability distribution for the holding period return for a stock:

State of the Economy	Probability	Holding Period Return
Boom	0.40	22%
Normal growth	0.35	11%
Recession	0.25	−9%

1. What is the expected holding period return for the stock?

   A) 11.67%
   B) 8.33%
   C) 10.4%
   D) 12.4%
   E) 7.88%

2. What is the expected standard deviation for the stock?

   A) 2.07%
   B) 9.96%
   C) 7.04%
   D) 1.44%
   E) 12.17%

3. What is the expected variance for the stock?

   A) 142.07%
   B) 189.96%
   C) 177.04%
   D) 148.04%
   E) 128.17%

Exercise 12.

[3]

Which of the following statements regarding risk-averse investors is **true**?

A) They only care about the rate of return.
B) They accept investments that are fair games.
C) They only accept risky investments that offer risk premiums over the risk-free rate.
D) They are willing to accept lower returns and high risk.
E) A and B.

Exercise 13.

[3]

Consider the following two investment alternatives. First, a risky portfolio that pays a 15 percent rate of return with a probability of 60% or a 5 percent return with a probability of 40%, and second, a T-bill that pays 6 percent.

1. The risk premium on the risky investment is

   A) 11 percent.
   B) 1 percent.
   C) 9 percent.
   D) 5 percent.
   E) none of the above.

2. If you invest $50,000 in the risky portfolio, your expected profit would be_ _ _ _ _ _ _ _ _ _ .

   A) $5,500
   B) $7,500

C) $25,000
D) $3,000
E) none of the above

Exercise 14.

[5]

	Investment	Expected Return E(r)	Standard Deviation
	1	0.12	0.3
Given	2	0.15	0.5
	3	0.21	0.16
	4	0.24	0.21

Utility function

$U = E(r) - (A/2)s^2$, where $A = 4.0$

1. Based on the utility function above, which investment would you select?

    A) 1
    B) 2
    C) 3
    D) 4
    E) cannot tell from the information given

2. Which investment would you select if you were risk neutral?

    A) 1
    B) 2
    C) 3
    D) 4
    E) cannot tell from the information given

Exercise 15.

[3]

The standard deviation of a portfolio that has 40% of its value invested in a risk-free asset and 60% of its value invested in a risky asset with a standard deviation of 40% is _ _ _ _%.

A) 18
B) 14
C) 19
D) 24
E) 20

Exercise 16.

[3]

If the standard deviation of stock 'A' is 38, the standard deviation of stock 'B' is 27, and the correlation between stocks 'A' and 'B' is -0.6, the covariance between stocks 'A' and 'B' is _ _ _ .

A) 615.6
B) -615.6
C) 27
D) -27
E) 417.23

Exercise 17.

[1]

When a portfolio consists of only a risky asset and a riskless asset, increasing the fraction of the overall portfolio invested in the risky asset will

A) increase the expected return on the portfolio.
B) increase the standard deviation of the portfolio.
C) not change the risk-reward ratio.
D) Neither A, B nor C is true.
E) A, B and C are all true.