LAST NAME _____   FIRST NAME _____

2-asset portfolio P with composition $\{x_A, x_B\}$:

$$E(r_P) = x_A E(r_A) + x_B E(r_B) \qquad Var(r_P) = x_A^2 \sigma_A^2 + x_B^2 \sigma_B^2 + 2 x_A x_B \sigma_A \sigma_B \rho_{AB} \qquad \rho_{AB} = \frac{Cov(r_A, r_B)}{\sigma_A \times \sigma_B}$$

The following applies to all questions below:
There are two risky assets, asset A and asset B, where $E(r_A) = 20\%$, $E(r_B) = 10\%$, $\sigma_A = 10\%$, $\sigma_B = 30\%$; $\rho_{AB} = 0.8$.

a) If the return of asset A will be above its expectation $E(r_A)$, then

- ❑ **It is likely but not certain that the return of B will be above its expectation $E(r_B)$.**
- ❑ It is likely but not certain that the return of B will be below its expectation $E(r_B)$.
- ❑ We can say nothing about how the return of B will compare to its expectation $E(r_B)$
- ❑ It is certain that the return of B will be above its expectation $E(r_B)$
- ❑ It is certain that the return of B will be below its expectation $E(r_B)$

b) Is it possible to build a portfolio with expected return of 30% ?

- ❑ No, this is not possible
- ❑ Yes by taking long positions in both assets.
- ❑ Yes by shorting A and buying B
- ❑ **Yes by buying A and shorting B**

c) What is the standard deviation of return of a portfolio with composition $\{x_A = 0.5, x_B = 0.5\}$?

- ❑ 10%
- ❑ 11 .40%
- ❑ 15.81%
- ❑ **19.24%**
- ❑ 20%

d) To maximize the expected return of your portfolio you should

- ❑ Put all your money into asset A
- ❑ Put all your money into asset B
- ❑ Buy both A and B
- ❑ **Buy A and short B**
- ❑ Short A and buy B

e) If you believe that the price of **A** will decrease substantially, which one of the following strategies on asset **B** you believe will be most profitable?

- ❑ Buy B
- ❑ **Short Sell B**
- ❑ Take no position in B
- ❑ None of the above

LAST NAME _____   FIRST NAME _____

2-asset portfolio P with composition $\{x_A, x_B\}$:

$$E(r_P) = x_A E(r_A) + x_B E(r_B) \qquad Var(r_P) = x_A^2 \sigma_A^2 + x_B^2 \sigma_B^2 + 2x_A x_B \sigma_A \sigma_B \rho_{AB} \qquad \rho_{AB} = \frac{Cov(r_A, r_B)}{\sigma_A \times \sigma_B}$$

The following applies to all questions below:
There are two risky assets, asset A and asset B, where $E(r_A) = 20\%$, $E(r_B) = 10\%$, $\sigma_A = 10\%$,
$\sigma_B = 30\%$; $\rho_{AB} = -0.8$.

a) If the return of asset A will be above its expectation $E(r_A)$, then

- ❏ It is likely but not certain that the return of B will be above its expectation $E(r_B)$.
- ❏ **It is likely but not certain that the return of B will be below its expectation $E(r_B)$.**
- ❏ We can say nothing about how the return of B will compare to its expectation $E(r_B)$
- ❏ It is certain that the return of B will be above its expectation $E(r_B)$
- ❏ It is certain that the return of B will be below its expectation $E(r_B)$

b) Is it possible to build a portfolio with expected return of 18% ?

- ❏ No, this is not possible
- ❏ **Yes by taking long positions in both assets.**
- ❏ Yes by shorting A and buying B
- ❏ Yes by buying A and shorting B

c) What is the standard deviation of return of a portfolio with composition $\{x_A = 0.5, x_B = 0.5\}$?

- ❏ 10%
- ❏ **11 .40%**
- ❏ 15.81%
- ❏ 19.24%
- ❏ 20%

d) To maximize the expected return of your portfolio you should

- ❏ Put all your money into asset A
- ❏ Put all your money into asset B
- ❏ Buy both A and B
- ❏ **Buy A and short B**
- ❏ Short A and buy B

e) If you believe that the price of **A** will decrease substantially, which one of the following strategies on asset **B** you believe will be most profitable?

- ❏ **Buy B**
- ❏ Short Sell B
- ❏ Take no position in B
- ❏ None of the above

LAST NAME _____   FIRST NAME _____

2-asset portfolio P with composition $\{x_A, x_B\}$:

$$E(r_P) = x_A E(r_A) + x_B E(r_B) \qquad Var(r_P) = x_A^2 \sigma_A^2 + x_B^2 \sigma_B^2 + 2x_A x_B \sigma_A \sigma_B \rho_{AB} \qquad \rho_{AB} = \frac{Cov(r_A, r_B)}{\sigma_A \times \sigma_B}$$

The following applies to all questions below:
There are two risky assets, asset A and asset B, where $E(r_A) = 20\%$, $E(r_B) = 10\%$, $\sigma_A = 10\%$, $\sigma_B = 30\%$; $\rho_{AB} = 0$.

a) If the return of asset A will be above its expectation $E(r_A)$, then

- ❑ It is likely but not certain that the return of B will be above its expectation $E(r_B)$.
- ❑ It is likely but not certain that the return of B will be below its expectation $E(r_B)$.
- ❑ **We can say nothing about how the return of B will compare to its expectation $E(r_B)$**
- ❑ It is certain that the return of B will be above its expectation $E(r_B)$
- ❑ It is certain that the return of B will be below its expectation $E(r_B)$

b) Is it possible to build a portfolio with expected return of 5% ?

- ❑ No, this is not possible
- ❑ Yes by taking long positions in both assets.
- ❑ **Yes by shorting A and buying B**
- ❑ Yes by buying A and shorting B

c) What is the standard deviation of return of a portfolio with composition $\{x_A = 0.5, x_B = 0.5\}$?

- ❑ 10%
- ❑ 11 .40%
- ❑ **15.81%**
- ❑ 19.24%
- ❑ 20%

d) To maximize the expected return of your portfolio you should

- ❑ Put all your money into asset A
- ❑ Put all your money into asset B
- ❑ Buy both A and B
- ❑ **Buy A and short B**
- ❑ Short A and buy B

e) If you believe that the price of **B** will decrease substantially, which one of the following strategies on asset **A** you believe will be most profitable?

- ❑ **Buy A**
- ❑ Short Sell A
- ❑ **Take no position in A**
- ❑ **None of the above**

LAST NAME _____   FIRST NAME _____

2-asset portfolio P with composition $\{x_A, x_B\}$:

$$E(r_P) = x_A E(r_A) + x_B E(r_B) \qquad Var(r_P) = x_A^2 \sigma_A^2 + x_B^2 \sigma_B^2 + 2 x_A x_B \sigma_A \sigma_B \rho_{AB} \qquad \rho_{AB} = \frac{Cov(r_A, r_B)}{\sigma_A \times \sigma_B}$$

The following applies to all questions below:
There are two risky assets, asset A and asset B, where $E(r_A) = 10\%$, $E(r_B) = 20\%$, $\sigma_A = 10\%$, $\sigma_B = 30\%$; $\rho_{AB} = -1$.

a) If the return of asset A will be above its expectation $E(r_A)$, then

- ❏ It is likely but not certain that the return of B will be above its expectation $E(r_B)$.
- ❏ It is likely but not certain that the return of B will be below its expectation $E(r_B)$.
- ❏ We can say nothing about how the return of B will compare to its expectation $E(r_B)$
- ❏ It is certain that the return of B will be above its expectation $E(r_B)$
- ❏ **It is certain that the return of B will be below its expectation $E(r_B)$**

b) Is it possible to build a portfolio with expected return of 100% ?

- ❏ No, this is not possible
- ❏ Yes by taking long positions in both assets.
- ❏ **Yes by shorting A and buying B**
- ❏ Yes by buying A and shorting B

c) What is the standard deviation of return of a portfolio with composition $\{x_A = 0.5, x_B = 0.5\}$?

- ❏ **10%**
- ❏ 11 .40%
- ❏ 15.81%
- ❏ 19.24%
- ❏ 20%

d) To maximize the expected return of your portfolio you should

- ❏ Put all your money into asset A
- ❏ Put all your money into asset B
- ❏ Buy both A and B
- ❏ Buy A and short B
- ❏ **Short A and buy B**

e) If you believe that the price of **A** will decrease substantially, which one of the following strategies on asset **B** you believe will be most profitable?

- ❏ **Buy B**
- ❏ Short Sell B
- ❏ Take no position in B
- ❏ None of the above