EC 102 **Name:** ______________________
Summer 2019
Due: 7/30/2019

Problem Set 4

Multiple Choice

1. (2 points) Imagine that someone offers you $\$X$ today or $\$1,500$ in five years. If the interest rate is 4%, then you would prefer to take the $\$X$ today if and only if
   - A. $X > 1,055.56$
   - B. $X > 1,120.89$
   - C. $X > 1,232.89$
   - D. $X > 1,338.26$

2. (2 points) Other things equal, as the number of stocks in a portfolio rises,
   - A. risk increases and the standard deviation of the return rises.
   - B. risk increases and the standard deviation fo the return falls.
   - C. risk decreases and the standard deviation of the return rises.
   - D. risk decreases and the standard deviation of the return falls.

3. (2 points) Gold coins are an example of
   - A. commodity money without intrinsic value.
   - B. commodity money with intrinsic value.
   - C. fiat money without intrinsic value.
   - D. fiat money with intrinsic value.

4. (2 points) The problem of moral hazard arises because
   - A. life if full of all sorts of risks.
   - B. after people buy insurance, they have less incentive to be careful about their risky behavior.
   - C. a high-risk person is more likely to apply for insurance than is a low-risk person.
   - D. insurance companies go to great effort to avoid paying claims to their policy holders.

5. (2 points) The members of the Federal Reserve's Board of Governors
   - A. are elected to office by the public every fourteen years.
   - B. are nominated by the U.S. Senate banking committee and confirmed by the U.S. house of representatives.

C. are elected by bankers in each Federal Reserve Region

D. are appointed by the president of the U.S. and confirmed by the U.S. Senate.

6. (2 points) Which of the following is a source of market risk?

   A. Holding stocks in many companies carries the risk of a reduced average return.

   B. Real GDP varies over time and sales and profits move with real GDP.

   C. When a paper producer has declining sales, it is likely that so will other paper producers.

   D. If stockholders become aggravated with the way a CEO runs a company, the price of that company's stock might fall in the stock market.

7. (2 points) The president of the Federal Reserve Bank of Boston

   A. can not attend all monetary policy meetings but can always cast a vote on monetary policy changes.

   B. can attend all monetary policy meetings and is always a voting member.

   C. can not attend all monetary policy meetings and is never a voting member.

   D. can attend all monetary policy meetings but is not always a voting member.

8. (2 points) Which of the following games might a risk-averse person play?

   A. a game where she has a 50% chance of winning \$1 and a 50% chance of losing \$1

   B. a game where she has a 60% chance of winning \$1 and a 40% chance of losing \$1

   C. a game where she has a 40% chance of winning \$1 and a 60% chance of losing \$1

   D. a game where she has a 50% chance of winning \$100 and a 50% chance of losing \$100

9. (2 points) The future value of a deposit in a savings account will be larger

   A. the longer a person waits to withdraw the funds

   B. the higher the interest rate is

   C. the larger the initial deposit is

   D. All of the above are correct

10. (2 points) Which of the following actions best illustrates adverse selection?

    A. A person who has narrowly avoided many accidents applies for automobile insurance.

    B. A person adds risky stock to his portfolio.

    C. A person is unwilling to buy a stock when she believes its price has an equal chance of rising or falling \$10

    D. A person purchases homeowners insurance and then checks his smoke detector batteries less frequently.

Short Answer Questions

1. (5 points) First National Bank starts out with \$200 in bank capital. Suppose that it takes \$800 in deposits and keeps 15% in reserve and loans out the rest. Fill out the balance sheet below:

Assets	Liabilities
Reserves	Deposits
Loans	Capital

   (a) What is the leverage ratio?

   (b) Suppose now that 10% of people who borrowed from First National Bank default on their loans. That is, suppose that the bank loans associated with these borrowers are now worthless. Show what happens to the balance sheet below:

Assets	Liabilities
Reserves	Deposits
Loans	Capital

   What is the new leverage ratio?

2. (5 points) Suppose the Fed conducts a \$100 million open market purchase of government bonds. If the required reserve ratio is 20%, what is the largest possible increase in money supply that could result? What is the smallest possible increase? Explain.

3. (5 points) Suppose that the money supply is \$2 trillion, nominal GDP is \$18 trillion, and real GDP is \$15 trillion.

   (a) What is the price level? What is the velocity of money?

   (b) Suppose that the velocity is constant and the economy's real output rises by 5%. What will happen to nominal GDP and the price level next year if the Fed keeps money supply constant?

   (c) What money supply should the Fed set if it wants to keep the price level stable?