Problem Set 1 for Economics 180.367:
Investments and Portfolio Management
Due at the beginning of class on September 17

Note: Point totals are shown at the beginning of each question. It is important to show your work.

1. (10 pts) Use Bloomberg to look up the yield (Mid Px) on the Treasury bill maturing on November 21, 2019 as of September 5, 2019 with settlement on September 6, 2019. The face value of the bill is $10,000. The number of days between the settlement date and maturity date is 76. Compute the price that an investor would pay for this bill implied by the quoted yield.

2. (10 pts) Use the BTMM page on Bloomberg to look up the overnight repo rate in Switzerland on September 4, 2019. Why does anyone agree to lend money at a negative interest rate?

3. (10 pts) Use Bloomberg to look up the effective federal funds rate (Bid Price or Last Price) on September 5, 2019. If you borrowed $10,000,000 in this market on that day, what interest would you owe at the maturity of the loan?

4. (40 pts). There are two possible outcomes for stocks A and B; each will either earn a return of +30% or -10%. Here are the probabilities of the four possible joint outcomes:

<table>
<thead>
<tr>
<th>A return is</th>
<th>B return is -10%</th>
<th>B return is +30%</th>
</tr>
</thead>
<tbody>
<tr>
<td>-10%</td>
<td>50%</td>
<td>20%</td>
</tr>
<tr>
<td>+30%</td>
<td>20%</td>
<td>10%</td>
</tr>
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(a) Find the expected return of stocks A and B.
(b) Find the variance of the percentage returns of stocks A and B.
(c) Find the covariance between the percentage returns of stocks A and B.
(d) Find the correlation between the percentage returns of stocks A and B.

5. (10 pts) Look up the end-of-year stock prices for Amazon at the end of 2017 and 2018 (Bloomberg mnemonic: AMZN US Equity). Amazon does not pay any dividends. What was the holding period return for Amazon in 2018?

6. (10 pts). An asset pays an investor $5 in one year from now and another $105 in two years. The effective annual interest rate (EAR) is 5%. What is the present value of this asset?

7. (10 pts). An asset costs $300 today and will have a payoff of $100 in one year and another $220 in two years. What is the internal rate of return?