Directions: Please answer the following questions and make sure your answer are legible. If you don’t show work and/or I can’t follow it, I won’t give partial credit. You may use a calculator (not the calculator function on other technology) and the Formula Sheet that I provide you, nothing else. Good Luck.

1. (5 points) A real estate agent is expecting a commission check of $10,000 in 2 month. Her company will give her the money today at a simple discount rate of 9%. What is the equivalent simple interest rate for this discount loan?

\[ D = M \cdot d \cdot T \]
\[ M = 10,000 \]
\[ d = 0.09 \]
\[ T = \frac{3}{12} \text{ year} \]
\[ \text{Discount} = 10,000 \cdot (0.09) \left( \frac{3}{12} \right) \]
\[ D = \$150 \]

\[ \text{equiv simp. Interest} \]
\[ I = PRT \]
\[ I = 150 \]
\[ P = 9850 \left< 10,000 - 150 \right> \]
\[ R = ?? \]
\[ T = \frac{3}{12} \]
\[ \frac{150}{9750 \cdot \frac{3}{12}} = R \]
\[ R = 0.0913705... \]

\[ \text{Equivalent simple interest rate is} \]
\[ 9.14\% \]

2. (5 points) Tony invested $33,000 in a CD which pays 1.9% compounded annually. The CD matures in 5 years. How much interest will Tony have earned after the 5 years?

\[ \text{Compound Interest (Annually)} \]
\[ FV = PV \cdot (1 + i)^n \]
\[ PV = 33,000 \]
\[ i = 0.019 \text{ or } 0.19\% \]
\[ n = 5 \text{ at interest compounded once a year for 5 years} \]
\[ FV = 33,000 \cdot (1 + 0.019)^5 \]
\[ FV = 36256.42 \]
\[ * \text{so the interest Tony earned is} \]
\[ 36256.42 - 33000 = 3256.42 \]
\[ \frac{FV}{PV} \]
\[ \$3256.42 \text{ in interest} \]

There is a Question on the Back
3. (5 points) Fatima invested $7,000 for 10 years in an investment that paid 2.8% compounded monthly. What is the future value of Fatima’s account?

\[ FV = PV \left(1 + \frac{i}{n}\right)^n \]

\[ k = 12 \]
\[ PV = 7000 \]
\[ i = \frac{0.028}{12} \]
\[ n = 120 \]

\[ FV = 7000 \left(1 + \frac{0.028}{12}\right)^{120} \]

\[ FV = 9258.89 \]

\[ \text{Future value} \]

Bonus: a) Option 1 (realestate company) equivalent simple interest 9.14%  
Option 2 (credit union) simple interest 9.1%

Since the real estate agent is the borrower, they would pick the option with lower (equiv) simple interest. Which is the credit union (9.1% is less than 9.14%).

b) If Fatima had 2.8% simple interest

\[ I = 7000 \times 0.028 \times 10 = 1960 \]

*we need to compare interest to interest or FV to FV

FV w/ compound (monthly) interest:

\[ 9258.89 \]

FV w/ simple interest:

\[ 7000 + 1960 = 8960.00 \]

She made 9258.89 - 8960.00 = $298.89 more

Bonus (1pt): You May Pick ONE of these two parts to answer for a bonus point if you have finished all 3 questions.

(a) (Question 1 continued) The real estate agent’s credit union would loan her money today at a simple interest rate of 9.1%. Which should the real estate agent choose, the discount loan from the real estate agency or the loan from the credit union? You must correctly and clearly explain your answer.

(b) (Question 3 continued) How much more money did Fatima make with this investment than if she had left her money in an investment which paid 2.8% simple interest for 10 years?