

Name: \_\_\_\_\_

MATH 108

Spring 2023

HW 3: Due 02/06

*"A billion here, a billion there, and pretty soon you're talking about real money."*

*–Everett Dirksen*

**Problem 1.** (10pt) Suppose that the CPI in 2021 was approximately 278.802 while the CPI in 2022 was approximately 296.797.

- (a) Find the inflation rate from 2021 to 2022.
- (b) Assuming that the CPI accurately reflects the prices of goods as a whole, how much would you estimate a good that cost \$69.99 in 2021 would cost in 2022?
- (c) Assuming that the inflation rate from 2021 to 2022 stayed constant, how much more do you estimate goods would cost in 2030 than in 2022?

**Problem 2.** (10pt) Anita needs a short term loan to cover some temporary expense increases. She takes out a short-term, 5 month loan for \$1100 that earns 9.4% annual simple interest.

- (a) How much will she owe in total at the end of the five months?
- (b) If Anita knows she will only be able to pay at most \$1300 at the end of the five months, what is the most she can take out on the loan now?

**Problem 3.** (10pt) Emmanuel is taking out a loan to help purchase a new delivery truck to help expand his small business. He decides on a truck that costs \$67,049. There is a \$160 processing/service fee for the truck. After this is added, he will pay 7% sales tax. He will take out a simple discount note to pay for this delivery truck. The note will have a period of 9 months at an annual interest rate of 8.3%.

- (a) How much will the truck cost in total?
- (b) What are the maturity and proceeds for this note?
- (c) How much does he owe at the end of the 9 months?
- (d) How much does he pay for the truck in the end, i.e. how much in total does he pay for the loan?