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. (4 points) Carla works at a company that offers a Defined Contribution retirement plan with a 75% match on employee contributions up to 6%. Carla currently makes $34,800 a year at this company.

(a) How much will be added to Carla’s retirement account this year if she contributes 5% of her salary?

(b) How much will be added to Carla’s retirement account this year if she contributes 8% of her salary

Continued on back
2. Joyce has 25 monthly payments of $272.30 left on a car loan. The loan has an interest rate of 4.25%.

(a) (5 points) What is Joyce’s **remaining balance** on her car loan?

\[
PV = PMT \cdot \frac{1}{\left(1 + \frac{r}{n}\right)^{nt}}
\]

\[
PV = 272.30 \times \frac{1}{\left(1 + \frac{0.0425}{12}\right)^{25}}
\]

\[
PV = 6503.819208... \quad \text{Rem. Bal} = 6503.82
\]

\[
\frac{1}{\left(1 + \frac{0.0425}{12}\right)^{25}} \approx 0.2384475655
\]

(b) (6 points)

Suppose Joyce also has 22 years left on her current mortgage. Her mortgage has monthly payments of $708, an interest rate of 4.1%, and a remaining balance of $123,009.31. Joyce is considering consolidating her current mortgage and car loan into a new 20-year mortgage at 4%.

i. How much does Joyce need to borrow with this new mortgage?

ii. What will Joyce’s new monthly payments be? (after consolidating)

\[
\text{Rem Bal Car.} + \text{Rem Bal Old Mort} = 6503.82 + 123,009.31 = 129,513.13
\]

\[
PV = PMT \cdot \frac{1}{\left(1 + \frac{r}{n}\right)^{nt}}
\]

\[
PMT = \frac{PV}{\frac{1}{\left(1 + \frac{0.041}{12}\right)^{240}} - 1} = 784.82
\]

(c) **Bonus: (2 pts)**

i. How much total would Joyce have spent repaying the old loans?

ii. How much total will Joyce spend repaying the new (consolidated) mortgage?

\[
272.30 \times 25 + 784.82 \times 240 = 1873,519.50
\]

\[
\frac{240 \times 784.82}{1873} = 356.80
\]