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) In Utah, the general tax rate (which also applies to prepared food items) is 4.7%, but grocery items are taxed at the reduced rate of 3%. Bret goes to the grocery store (in Utah) and buys:

- prepared deli sandwich $5.25
- box of trash bags $6.50
- wig (for halloween costume) $9.99

You don’t eat trash bags, they are not grocery items.

What is Bret’s total bill?

\[
P = 5.25 + 6.50 + 9.99 = 21.74
\]

\[
T = P (1+r)
\]

\[
T = 21.74 (1 + 0.047)
\]

\[
T = 22.76178
\]

Total Bill $22.76

So she saves very little ($730.30) with the new loan... but the lower monthly payments might make it worth it while... if she doesn’t mind extending the payments a more years.

There is a question on the back!
2. This question has several parts:

(a) (5 points) Geetika has 18 years (216 monthly payments) left on her mortgage. Her monthly payments are $825.75 and her interest rate is 4.5%. What is the remaining balance on her mortgage?

\[ a_{216|0.045} = 22.22057152 \text{ and } a_{216|0.045/12} = 147.8579944 \]

\[ \text{Remaining Balance} = P.V. \text{ of remaining payments} \]

\[ P.V. = 825.75 \times 147.8579944 \]

\[ P.V. = 122,093.74 \]

\[ \text{Remaining Bal} = 122,093.74 \]

or \[ 1,122,094 \]

(b) Geetika also has 19 monthly payments remaining on her car loan. Her monthly payments are $225.70, and her interest rate is 5.8%. The remaining balance (current balance) on her car loan is $4087.86. Note I gave you a lot of the relevant information for this car loan. Geetika is considering consolidating these 2 loans into a new 20 year mortgage. She determines she can get a new 20 year mortgage at 3.9%.

i. (4 points) What will Geetika’s monthly payments on the new mortgage be?

\[ s_{240|0.039/12} = 362.6815291 \text{ and } a_{240|0.039/12} = 166.4657994 \]

ii. (1 point) How much was she paying each month before the consolidation?

iii. (1 point) Which is lower? Her old monthly payments or her new monthly payments?

**Bonus (1 pt):** Determine the total amount Geetika will save with this refinancing (or the total amount more she will spend with this refinancing).