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) Melissa Lewis took out a $4,000 loan (to remodel her basement into a Disco-theme media room). Her interest rate is 4.3%, the term of the loan is 3 years, and her monthly payments are $118.45. Fill in the first 2 rows of the Amortization Table. (Note, these are the first 2 rows of a much longer table).

<table>
<thead>
<tr>
<th>Payment Number</th>
<th>Payment Amount</th>
<th>Interest Amount</th>
<th>Principal Amount</th>
<th>Remaining Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>118.45</td>
<td>× 14.33</td>
<td>104.12</td>
<td>3,895.88</td>
</tr>
<tr>
<td>2</td>
<td>118.45</td>
<td>× 13.96</td>
<td>104.49</td>
<td>3,791.39</td>
</tr>
</tbody>
</table>

\[ I = PRT \]
\[ I = 4000(0.043)(\frac{1}{12}) \]
\[ I = 14.33 \]

2. (2 points) Alex, Beth, and Mitch, are jointly writing a book about a recent adventure they had. Because each has a different amount of time to contribute to the book (and some are more diligent about editing than others), they decide on a 5:4:3 split. They receive advance of $20,000 and agree to distribute it according to the 5:4:3 split. How much will Alex receive?

\[ \text{total shares} = 5 + 4 + 3 = 12 \]
\[ \frac{20,000}{12} = 1666.67 \]
\[ \text{Alex gets} \ 5 \times 1666.67 = 8333.33 \text{ (or 8333.35)} \]

More Questions on other side:
3. Mark Watney has 19 monthly payments of $323.54 left on his car loan at 3.75% interest.
   (a) (4 points) What is Mark’s remaining balance (on the car loan)?

\[
\text{Rem. } B = \text{PV of all remaining payments} \\
PV = PMT \times \text{ann} \\
PMT = 323.54 \\
N = 19 \\
r = 0.0375/12 \\
\text{ann} = \frac{(1 + 0.0375/12)^{19} - 1}{(1 + 0.0375/12)^{19}} = 15,419.01 \text{ million}
\]

(b) (6 points) Mark also has 18 years of mortgage payments left. His interest rate on his mortgage is 3.6%, each monthly payment is $829 and his remaining balance on the old mortgage is $131,645.59.
Mark is considering consolidating his existing mortgage and car payment into a new 20 year mortgage at 3.25%.
   i. What will his new monthly payments be? $780.49
   ii. How much will Mark save by consolidating/refinancing (or how much more will he spend by consolidating/refinancing)?

\[
\text{New total amount to borrow} = \text{R. B. car} + \text{R. B. old mort} \\
= 5,959.29 + 131,645.59 \\
= 137,604.88 \text{ amount to borrow}
\]

\[
\text{PV annuity, ord. by details} \\
PV = PMT \times \text{ann} \\
PV = 137,604.88 \\
PMT = 780.49 \\
N = 20 \times 12 = 240 \\
r = 0.035/12 \\
\text{ann} = \frac{(1 + 0.035/12)^{240} - 1}{(1 + 0.035/12)^{240}} = 176,305,9714
\]

\[
\text{Old way costs} = 18,521.26 \\
\text{New way costs} = 20.12 \times 780.49 \\
= 157,317.60 \\
\text{New way costs} = 2106.34 \text{ more}
\]