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. (9 points) Three years ago Vandana opened an investment account and immediately deposited $50. Assume that every month she deposited $50 into the investment, and that the investment earned 4.1%.
   (a) Is this an Ordinary Annuity or an Annuity Due?
   (b) How much is in Vandana’s investment account today?
   (c) How much interest has Vandana earned from this account?

\[ FV = PMT \times \frac{1}{i} - 1 \]
\[ n = 3 \times 12 = 36 \]
\[ i = 0.041/12 \]
\[ PMT = 50 \]
\[ s_{\text{12}} = \frac{1 + 0.041^{12}}{0.041^{12}} - 1 = 38.33251249 \]
\[ FV = 50 \times (38.33251249) \times (1 + 0.041^{12}) \]
\[ FV = 1918.44 \]

(b) \[ \text{amt in account} = 1918.44 \]

(c) \[ \text{int} = FV - \text{total deposit} \]
\[ \text{int} = 1918.44 - 36 \times 50 \]
\[ \text{int} = 111.44 \]

There are questions on the back!
2. (1 point) Is the following an Annuity or Not an Annuity?

In an effort to encourage himself to save money Victor sets aside all the one dollar bills he receives as change. Once he has $20 in one dollar bills he takes them to the bank and deposits the $20.

(sometimes it may take Victor 1 week to accumulate $20,
other times it may take 2 months)

3. (1 point) Is the $8515.55 a Present Value or a Future Value in the scenario below?

Victoria has been depositing $20 a week for the past 2 years into a savings account. Today she has $8515.55 in the account and withdraws the money to buy herself a used car.

4. (4 points) Violet would like to have $12,000 saved up for a deposit on a house in 5 years. She plans to make quarterly payments into an account that earns 1.5% interest for the next five years.

(a) Is this an Ordinary Annuity or an Annuity Due?
(b) How much should each deposit be so Violet can meet her $12,000 goal?

To save you some time, you may select the correct \( s_{\overline{n}|i} \) value below to use, you don't need to calculate it yourself:

\[
\begin{array}{c}
\$4.0909034 = s_{4,0.015} \\
\$5.1522669 = s_{5,0.015} \\
\$23.123667 = s_{20,0.015} \\
\$20.728790 = s_{20,0.015/4}
\end{array}
\]

\[ FV = PMT \times s_{\overline{n}|i} \]

\[ 12,000 = PMT \times (20.728790) \]

\[ 12,000 = PMT \]

\[ 20.728790 = PMT \]

\[ 578.904999 = PMT \]