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) Consider the sequence \( a_n = 100 - 3n \) starting with index \( n = 0 \).
   (a) What are the first 4 terms of the sequences?
   (b) What is the 20th term of the sequence?
   (c) Find the Third Partial Sum of the sequence.

   \[ \begin{align*}
   a_0 &= 100, \\
   a_1 &= 97, \\
   a_2 &= 94, \\
   a_3 &= 91.
   \end{align*} \]

   \[ \begin{align*}
   b) \quad 20^{th} \text{ term} &= a_{19} = 100 - 3(19) = 43 \\
   c) \quad S_3 &= 100 + 97 + 94 = 291
   \end{align*} \]

2. (2 points) Determine if the following Sequences are Arithmetic, Geometric or Neither.
   (a) 48, 42, 36, 30, ...
   (b) 162, 54, 18, 6, ...

   \[ \begin{align*}
   a) \quad \text{Arith, } d &= 6 \\
   48 - 6 & = 42, 42 - 6 = 36, 36 - 6 = 30, ...
   \end{align*} \]

   \[ \begin{align*}
   b) \quad \text{Geo} \\
   r &= \frac{54}{162} = \frac{1}{3} \\
   \text{or } r &= \frac{3}{5} = 0.6
   \end{align*} \]

3. (2 points) The following sequence 4, 11, 18, 25, 32, ... is Arithmetic, find a formula for the \( a_n \) (the \( n^{th} \) term of the sequence). Remember to indicate where your index starts.

   \[ a_1 = 4 \\
   d = +7 \\
   a_n = a_1 + (n-1)d \\
   a_n = 4 + (n-1)7 \\
   \text{for } n=1 \]

Continued on the other side...
4. (7 points) Penny is expecting a paycheck of $1,450 in 18 days, but she needs money now for a medical procedure. She finds that Catskill Lenders offers to loan her the money, taking as their fee a discount of 1.6%. What is the equivalent simple interest rate for this loan?

(a) **Bonus (1 point):** Trying to help Penny, her friend Robbie found a loan that Penny qualified for with a simple interest rate of 20%. Which should Penny choose and why, the Loan from Catskill Lenders or the loan Robbie found?

\[
\text{Fee} \quad 0.016 \times 1450 = 23.20
\]

\[
\text{Equiv simp int}
\]

\[
I = PR \text{r}
\]

\[
1 - \text{Fee} \quad I = 23.20
\]

\[
R = ?
\]

\[
T = \frac{14}{365}
\]

\[
23.20 = 1426.10 \times R \left( \frac{14}{365} \right)
\]

\[
23.20 \div \left( 1426.10 + \left( \frac{14}{365} \right) \right) = R
\]

\[
.329719 \ldots = R
\]

\[
\text{Equiv simp int} = 32.97\%
\]