**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) For the arithmetic sequence $-7, -3, 1, 5, \ldots$
   (a) Find a formula for $a_n$ (the $n^{th}$ term in the sequence)
   (b) Find the $24^{th}$ partial sum of the sequence.

   ![Formula derivation and computations](formula_derivations.png)

2. (6 points) Bill is paying for commercials on a small, upstart weekly podcast. Both he and the podcaster agree that the podcast is becoming more and more popular, so commercials should get more expensive as the podcast becomes more popular. They agree that he will pay $10 for his commercial in week 1, and that each week the price of the commercial will increase by $3.

   (a) How much does Bill pay for his commercial in week 2? $\$13$
   (b) How much does Bill pay for his commercial in week 52? $\$163$
   (c) How much money in total has Bill paid for his commercials over the whole year (52 weeks)?

   ![Commercials price calculation](commercial_prices.png)

There is a Question on the Back
3. (5 points) Sarah has a discount note with a face value of $2000 and a term of 150 days with a simple discount rate of \(9 \frac{1}{2}\%\).

(a) What is the maturity value of this note?

(b) What is the amount of the discount of this note?

(c) What are the proceeds for this note?

\[ D = M d T \quad \text{(Formula Sheet)} \]

\[ M = \$2000 \]
\[ d = .092 \]
\[ T = \frac{150}{365} \]

\[ D = 2000 \times .092 \times \left( \frac{150}{365} \right) \]

\[ D = \$75.62 \]

\[ Maturity \ V - Disc. = Proceeds \]

\[ 2000 - 75.62 = \$1924.38 \]