| MODULE 12 | **SEQUENCES AND SERIES** |

Name:_____ Points:_____

Exercise 1. Find the sum.

(a) $\displaystyle\sum_{k=1}^{5}(k^2 + 2k) =$

(b) For the sequence $a_1, a_2, a_3, \ldots$ given by $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \ldots$ find

$\displaystyle\sum_{n=3}^{6} a_n =$

(c)   For the geometric sequence given by $6, 12, 24, 48, \ldots$ find

$$\sum_{i=1}^{15} a_i =$$

(d)   For the arithmetic sequence given by $-13, -16, -19, -22, \ldots$ find

$$\sum_{k=1}^{2345} a_k =$$

(e)   For the geometric sequence given by $-6, 2, -\frac{2}{3}, \frac{2}{9}, \ldots$ find

$$\sum_{n=1}^{\infty} a_n =$$

(f)   For the arithmetic sequence given by $2, 4, 6, 8, 10, \ldots$ find

$$\sum_{k=1}^{\infty} a_k =$$

Exercise 2. Suppose you have a loan of $1000 with an annual interest rate of 4%.

(a)   If you pay $70 each month what is the principal after n months? (Hint: what is the principle after 1 month? 2 months? 3 months? Don't over simplify and notice the pattern. Then use the formula for the geometric series to give a closed formula).

(b)   How long does it take to pay off?

(c)   (Optional) How much would you have to pay a month to pay it off in 3 years?