Name: _____

An Introduction to Sequences and Series

1) Fill in the next three terms in the sequence

    1) 1, 2, 3, 4, 5, . . .

    2) 1, 3, 5, 7, 9, . . .

    3) 2, 5, 8, 11, 14, . . .

    4) 1, 2, 4, 8, . . .

    5) 1, 2, 4, 7, 11, . . .

    6) 54, 18, 6, 2,

    7) $\frac{1}{3},\frac{1}{6},\frac{1}{12},\frac{1}{24},\ldots$

    8) $\frac{1}{2},\frac{2}{3},\frac{3}{4},\frac{4}{5},\ldots$

    9) 1, 4, 9, 16, 25, . . .

    10) 1, 2, 3, 5, 8, 13, 21, . . .

    11) 1, 8, 27, 64, . . .

    12) 1, 2, 6, 24, 120, . . .

2) For each of the following series, write down the first four terms, and then add them together. Also, write down the n^{th} term and the $(n+1)^{th}$ term.

    1) $\sum_{r=1}^{n}(2r+3)$

    2) $\sum_{r=1}^{n}36\left(\frac{1}{3}\right)^{r-1}$

    3) $\sum_{r=1}^{n}\frac{1}{r!}$

    4) $\sum_{r=1}^{n}\left(\frac{r}{r+2}\right)(-1)^{r+1}$

    5) $\sum_{r=1}^{n}\frac{1}{(2r-1)(2r+1)}$