

Name: \_\_\_\_\_

## An Introduction to Sequences and Series

**Exercise 1:** Write the next two terms of the sequence, and tell what pattern you used.

- 1) 1, 2, 4, 7, 11, 16, ...
- 2) 1, 11, 20, 28, 35, 41, ...
- 3) 1, 1, 2, 3, 5, 8, 13, ... (A Fibonacci sequence)
- 4) 1, 2, 6, 24, 120, 720, ... (The sequence of Factorials)
- 5) 1, 3, 6, 10, 15, ... (The sequence of triangular numbers)
- 6)  $\frac{1}{12}, \frac{1}{19}, \frac{1}{26}, \frac{1}{33}, \dots$  (A harmonic sequence)
- 7) 1, 1, 2, 2, 3, 4, 4, 8, 5, 16, 6, 32, ...
- 8) 100, 100, 75, 50, 50, 25, 25

**Exercise 2:** Find the sum of the series.

1.  $\sum_{k=1}^5 7$

2.  $\sum_{i=1}^5 -\sqrt{2}$

3.  $\sum_{k=1}^5 k!$

4.  $\sum_{i=0}^9 \left( \frac{-6i+9}{i^2} \right)$

5.  $\sum_{i=1}^{12} (33-2i)$

6.  $\sum_{i=1}^8 (3i+4)$

7.  $\sum_{i=1}^4 \frac{1}{2i}$

8.  $\sum_{i=1}^4 \frac{i}{4}$

**Exercise 3:** Find the sum of the given series.

1.  $\sum_{k=1}^6 (-10)$

2.  $\sum_{i=0}^4 [(-1)^{i+1} (i!)]$