Sequences and Series - Lesson 1 Problem Set

Grade 12 Mathematics

Problem Set

1. Is this a sequence (hint: a sequence is a list of numbers in a specific order)? If so, what is the next term?

a. 2, 4, 6, 8, ___

b. 1, 12, 4, 13, 3, 5 , ___

c. 3, 9, 27, 81, ___

d. 1, 5, 2, 10, 25, ___

e. 2, 3, 5, 7, 11, 13, ___

2. Is this sequence finite or infinite? Explain your answer.

a. 1, 4, 9, 16, 25, ...

b. 2, 4, 6, 8, 10

c. 1, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$, ...

d. 5, 10, 15, 20, 25

3. Find the 10th term of the sequence defined by $T_n = 3n + 2$.

4. Find the 15th term of the sequence defined by $T_n = 2^n$.

5. Determine whether the sequence defined by $T_n = \frac{1}{n}$ is increasing, decreasing, or neither.

6. Determine whether the sequence defined by $T_n = (-1)^n$ is increasing, decreasing, or neither.

7. Find the sum of the first 20 terms of the sequence defined by $T_n = 5n$.

8. Find the sum of the first 15 terms of the sequence defined by $T_n = 2^n$.

9. Is this sequence arithmetic, geometric, or neither? Justify your answer.

a. 3, 6, 9, 12, ...

b. 2, 4, 8, 16, ...

c. 1, 2, 4, 7, 11, ...

d. 5, 10, 15, 20, ...