**Arithmetic and Geometric Sequences**

Based on the terms given, state whether or not each sequence is arithmetic. If it is, identify the common difference, *d* :

|  |  |
| --- | --- |
| 1. 6, 10, 14, 18, 22, …
 | 1. -3, 0, 3, 6, 9, …
 |
| 1. 9, 7, 5, 3, 1, …
 | 1. 3, 7, 12, 18, 25, …
 |

Use the recursive formula given to find the first four terms of each arithmetic sequence.

|  |  |
| --- | --- |
| 1. t1 = 5

tn = tn-1 + 2 | 1. t1 = 18

tn = tn-1 – 3 |
| 1. t1 = -4

tn = tn-1 + 3 |  |

Find the indicated term given the two other terms:

|  |  |
| --- | --- |
| 1. 5th term; t3 = 10 and t5 = 26
 | 1. 10th term; t1 = 7 and t4 = 37
 |
| 1. 1st term; t6 = -3 and t8 = -13
 |  |

Write an explicit formula for the *n* th term of each arithmetic sequence:

|  |  |
| --- | --- |
| 1. 6, 8, 10, 12, 14, …
 | 1. 1, -6, -13, -30, -27
 |
| 1. 20, 15, 10, 5, 0, …
 | 1. 11, 15, 19, 23, 27
 |

Determine whether each sequence is a geometric sequence. If it is, identify the common ratio, ***r***, and give the next 3 terms:

|  |  |
| --- | --- |
| 1. 3, 6, 12, 24, …
 | 1. 1, 3, 5, 7, ...
 |
| 1. 2, 4, 8, 16, …
 | 1. 9, 3, 1, $\frac{1}{3}$, …
 |

List the first four terms of each geometric sequence.

|  |  |
| --- | --- |
| 1. t1 = 3

tn = 2tn-1  | 1. t1 = -2

tn = 4tn-1  |
| 1. t1 = 4

tn = -3tn-1  |  |

Write an explicit formula for the ***n***th term of each geometric sequence:

|  |  |
| --- | --- |
| 1. 2, 4, 8, 16, …
 | 1. 1, 3, 9, 27, …
 |
| 1. 30, 10, $3\frac{1}{3}$, $1\frac{1}{9}$, …
 |  |

4.) Find S10 for 2, 4, 8, 16,…..

5.) Find S8 for 1, 3, 9, 27,….

6.) Find the sum of the infinite series: 30 + 10 + 3 1/3 + 1 1/9 …