

AP Precalculus - M3Y & M3Z  
Arithmetic & Geometric Sequences - Homework 1

1. Let  $a_n$ ,  $n \in \mathbb{N}^*$ , be an arithmetic sequence. Find the general term of  $a_n$  if:

(i)  $a_1 = 9$  and  $d = 3$

(iii)  $a_1 = 6$  and  $d = -3$

(ii)  $a_1 = -10$  and  $d = 5$

(iv)  $a_1 = -8$  and  $d = -\frac{4}{5}$

2. Let  $b_n$ ,  $n \in \mathbb{N}^*$ , be a geometric sequence. Find the general term of  $b_n$  if:

(i)  $b_1 = 1$  and  $r = 2$

(iii)  $b_1 = 3$  and  $r = -\frac{1}{2}$

(ii)  $b_1 = -\frac{1}{8}$  and  $r = 4$

(iv)  $b_1 = -5$  and  $r = -3$

3. Evaluate the following sums:

(i)  $2 + 5 + 8 + 11 + \dots + 899$

(iii)  $1 + \frac{1}{2} + 0 - \frac{1}{2} - \dots - 49$

(ii)  $1 + 2 + 4 + 8 + \dots + 2048$

(iv)  $12 - 4 + \frac{4}{3} - \frac{4}{9} + \dots - \frac{4}{6,561}$

4. Let  $a_n$ ,  $n \in \mathbb{N}^*$ , be an arithmetic sequence. If  $a_5 = 12$  and  $a_{17} = 48$ , find  $a_{2024}$ .

5. Let  $b_n$ ,  $n \in \mathbb{N}^*$ , be a geometric sequence. If  $b_3 = \frac{5}{2}$  and  $b_9 = \frac{5}{128}$ , find  $b_{15}$ .

6. Let  $a_n$ ,  $n \in \mathbb{N}^*$ , be an arithmetic sequence with  $a_{10} = 10$  and  $S_{20} = 230$ . Find the general term of  $a_n$ .

7. Let  $a_n$ ,  $n \in \mathbb{N}^*$ , be an arithmetic sequence with  $a_1 = 5$  and  $a_5 = 13$ .  
Find the sum  $a_{100} + a_{101} + a_{102} + \dots + a_{2025}$ .