

The following problems are about arithmetic sequences and series.

1. $a_1 = 5, d = 6$. Find a_8 .

2. $a_1 = 2, a_2 = 12$. Find a_{23} .

3. $a_2 = 4, a_3 = 18$. Find a_{20} .

4. $a_1 = 1, a_2 = 4$. Find $\sum_{k=1}^{20} a_k$.

5. Find the sum of the arithmetic series $2 + 7 + 12 + \cdots + 10002$.

The following problems are about geometric sequences and series.

6. $a_1 = 3, r = 2$. Find a_{13} .

7. $a_1 = 3, a_2 = \frac{15}{2}$. Find a_9 .

8. $a_1 = 3, r = \frac{1}{2}$. Find $\sum_{k=1}^{10} a_k$.

9. $a_2 = 6, a_3 = 2$. Find $\sum_{k=1}^{12} a_k$.

10. $a_1 = \frac{5}{3}, r = \frac{-1}{2}$. Find $\sum_{k=1}^{\infty} a_k$.