Arithmetic and geometric sequences

1. The first terms of an arithmetic sequence are $5 - x$, $\frac{12}{x}$, 9. Find x.

2. Find the arithmetic sequence if $a_3 + a_5 = 18$ and $a_1 a_5 = 33$.

3. Solve the equation
$$2 + 5 + 8 + \cdots + x = 610.$$

4. How many terms of an arithmetic sequence do we need to sum up to get -16 if $a_3 = 10$ and $a_7 = 2$?

5. Between -23 and 65 insert 10 number such that the obtained sequence is arithmetic. Find the sequence.

6. Find x for which the given numbers form a geometric sequence: $\frac{1}{x+2}$, $\frac{1}{x-2}$, $\frac{1}{x+4}$.

7. Find the geometric sequence and the sum s_{15} if $a_2 = -6$ and $a_5 = 48$.

8. Between 48 and 243 insert 3 number such that the obtained sequence is geometric. Find the sequence.

9. Solve the equation
$$-2 + 8 - 32 + \cdots + x = 26214.$$

10. Janez has decided to invest 2000 euros. The principal is invested at an interest rate of 2% per year.

    1. How much money will he have after 2 years?

    2. How much money will he have after 7 years if after 2 years he invests additional 1000 euros?

    3. What should the interest rate be in order for the principal to double its value after 10 years?