

In an arithmetic Series: Given: $a_{24} = 15.17$, $d = 0.33$, $S_n = 2944.78$ = The Sum of n-terms.
Find n, the number of terms.

Recall these formulas: $a_n = a_1 + (n - 1)d$, $S_n = \frac{n(a_1 + a_n)}{2}$, Quadratic Formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$$a_{24} = a_1 + 23(0.33) = 15.17$$

$$a_1 = 15.17 - 23(0.33) = 7.58$$

$$a_n = 7.58 + (n - 1)(0.33)$$

$$a_n = 7.58 + 0.33n - 0.33$$

$$a_n = 0.33n + 7.25$$

$$S_n = \frac{n(7.58 + 0.33n + 7.25)}{2} = 2944.78$$

$$\frac{0.33n^2 + 14.83n}{2} = 2944.78$$

$$0.33n^2 + 14.83n = 5889.56$$

Use the Quadratic Formula without the negative before the radical because that would make n a negative.

$$n = \frac{-14.83 + \sqrt{219.9289 - 4(0.33)(-5889.56)}}{0.66}$$

$$n = \frac{-14.83 + \sqrt{7994.1481}}{0.66}$$

$$n = \frac{-14.83 + 89.41}{0.66}$$

$$n = 113 \text{ Terms}$$

Calculators may be used.

Exer. 1-3: Express the sum in terms of summation notation.

1. $1 + 3 + 5 + 7 + 9 + 11$

2. $5 + 15 + 45 + 135 + 405$

3. $\frac{5}{13} + \frac{10}{11} + \frac{15}{9} + \frac{20}{7}$

Exer. 4-5: Find the number of terms in the arithmetic sequence with the given conditions.

4. $a_1 = -2, d = \frac{1}{4}, S_n = 21$

5. $a_6 = -3, d = 0.2, S_n = -33$

6. Insert five arithmetic means between 2 and 10.

7. Insert three arithmetic means between 3 and -5.

8. Find the 7th term of the geometric sequence whose second and third terms are 2 and $-\sqrt{2}$.9. Given a geometric sequence with $a_4 = 4$ and $a_7 = 12$, find r and a_{10} .

10. $\sum_{n=1}^{10} 3^n =$

Exer. 11-12: Write using Sigma, then Find the exact rational number represented by the repeating decimal.

11. 5.146146146 ...

12. 31.967676767 ...

13. Find the 3 geometric means between 2 and 512.