

SECTION 2.1 ARITHMETIC SEQUENCES AND SERIES

- i) Solving for Terms and Sums of an arithmetic sequences
- ii) Problems involving A.S.

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ARITHMETIC SEQUENCES:
 A sequence with a pattern, where each term

Ie: For each of the following sequences, find the common difference if it is arithmetic:

i) 3, 6, 9, 12 ii) -5, -11, -17, -23,.....


iii) 19, 11, 4, -2,.... iv) 2, 4, 8, 16,....

v) 0, 1, 1, 2, 3, 5, 8,....



HOW DOES AN ARITHMETIC SEQUENCE WORK?

- o The "a" or "t₁"
- o Each term after the first adds another
- o The value of each term is denoted "t_n", where "n"
- o The number of common differences "d" in each term



Ex#: SOLVE EACH OF THE PROBLEMS BELOW

Find the 30th term in the sequence:

12, 25, 38, 51.....

Find the 200th term in the sequence:

-4, -11, -18,

Ex#: SOLVE EACH OF THE PROBLEMS BELOW

What term is -523 in the arithmetic sequence?

-11, -19, -27,.....

Find the 3 missing terms in the arithmetic sequence:

-5, _____, _____, _____, 43

FORMULA FOR THE SUM OF AN ARITHMETIC SEQUENCE:

- The sum of an arithmetic series up to the " n^{th} " term is
- If we group the first with the last term and also every term in between,

Ex: FIND THE SUM UP TO THE 10TH TERM:

$$8 + 15 + 22 + 29 + \dots$$

Ex: FIND THE SUM UP TO THE 100TH TERM:

$$22 + 14 + 6 + (-2) + (-10) + (-18) + (-26) + (-34) + \dots$$



Ex: FIND THE SUM OF THE ARITHMETIC SERIES:

$$2 + 7 + 12 + \dots + 62$$

ii) $(x+1) + (3x-1) + (4x+2) + \dots + t_8$



Ex#) If the sum of the first 50 odd numbers is equal to "S" and the sum of the first 100 even numbers is equal to T, then what is the value of "T - S"?



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