Arithmetic Sequences

Patrons are reminded that the main formula is

$$T = a + (n-1)d$$

where n is the term number, T is the term, d is the common difference, and a is the first term. And the sum formula

$$S = \frac{n}{2}\left[2a + (n-1)d\right].$$

1. Find the 100th term of the following sequences:

   (a) $5, 7, 9, 11, 13, 15, \ldots$. $\boxed{203}$

   (b) $10, 7, 4, 1, -2, -5 \ldots$. $\boxed{-287}$

   (c) $14, 14.5, 15, 15.5, 16, 16.5, \ldots$. $\boxed{63.5}$

2. The first term of an AP is 7. The common difference is 3. Find the 20th term of the sequence.

   $\boxed{64}$

3. The first term of an AP is -5. The common difference is -2. Find the 100th term of the sequence. $\square$

4. The first term of an AP is 12. The common difference is 0.1. Find the 80th term of the sequence. $\square$

5. The first term of an AP is 100. The common difference is -4. Find the 65th term of the sequence. $\square$

6. The first term of an AP is 12.5. The common difference is 0.5. Find the 150th term of the sequence. $\square$

7. The 4th term of an AP is 30. The common difference is 8. Find the first term of the sequence.

   $\boxed{6}$

8. The first term of an AP is 6. The common difference is 2. Find the sum of the first 100 terms of the sequence. $\square$

9. The first term of an AP is 10. The common difference is $\frac{1}{2}$. Find the sum of the first 300 terms of the sequence. $\square$

10. The first term of an AP is 90. The common difference is -3. Find the sum of the first 200 terms of the sequence. $\boxed{-41700}$

11. Find the sum $10 + 13 + 16 + 19 + 22 + \ldots$ (200 terms). $\square$

12. Find the sum $17 + 19 + 21 + 23 + 25 + \ldots$ (1000 terms). $\square$

13. Find the sum $100 + 95 + 90 + 85 + 80 + \ldots$ (300 terms). $\square$

14. Find the sum $14 + 17 + 20 + 23 + 26 + \cdots + 335$. (Hint: Find out how many terms there are.)

    $\boxed{18846}$

15. Find the sum $80 + 75 + 70 + 65 + 60 + \cdots + (-100)$.

16. The 10th term of an AP is 23 and the 15th term is 38.

    (a) Find the first term of the sequence. ⬚-4

    (b) Find the 100th term of the sequence. ⬚293

    (c) Find the sum of the first 20 terms of the sequence. ⬚490

17. The 8th term of an AP is 172 and the 19th term is 128.

    (a) Find the first term of the sequence. ☐

    (b) Find the 50th term of the sequence. ☐

    (c) Find the sum of the first 120 terms of the sequence. ☐

18. The 5th term of an AP is 5 and the 21st term is 9.

    (a) Find the first term of the sequence. ⬚4

    (b) Find the 120th term of the sequence. ⬚33.75

    (c) Find the sum of the first 1000 terms of the sequence. ⬚128875