Ch-5 Arithmetic Progressions

1. Find the 6th term of the A.P. : $\frac{2m+1}{m}$, $\frac{2m-1}{m}$, $\frac{2m-3}{m}$, …
2. If the numbers a, b, c, d and e form an A.P., then find the value of a – 4b + 6c – 4d + e.
3. If $\frac{a^{n+1}+b^{n+1}}{a^n+b^n}$ is the arithmetic mean between 'a' and 'b', then, find the value of 'n'.
4. If p^{th} term of an A.P. is $\frac{1}{q}$ and q^{th} term is $\frac{1}{p}$, then prove that the sum of the first 'pq' terms is $\frac{1}{2}$[pq+ 1].
5. If $\frac{1}{b+c}$, $\frac{1}{c+a}$, $\frac{1}{a+b}$ are in A.P., then prove that a^2, b^2, c^2 are also in A.P.
6. Solve the equation : 1 + 4 + 7 + 10 + ... + x = 287.
7. Find three numbers in A.P. whose sum is 21 and their product is 231.
8. If $\frac{4}{5}$, a, $\frac{12}{5}$ are three consecutive terms of an AP, find the value of a.
9. For what value of p, are (2p – 1), 7 and $\frac{11}{2}$p three consecutive terms of an AP?
10. Write the common difference of an A.P. whose n^{th} term is 3n + 5.
11. Write the value of x for which x + 2, 2x, 2x + 3 are three consecutive terms of an A.P.
12. For what value of k, are the numbers x, (2x + k) and (3x + 6) three consecutive terms of an A.P.?
13. If $\frac{4}{5}$, a, 2 are three consecutive terms of an A.P., then find the value of a?
14. For what value of p are 2p – 1, 7 and 3p three consecutive terms of an A.P.?
15. For what value of p are 2p + 1, 13 and 5p – 3 three consecutive terms of an A.P.?
16. Find the next term of the A.P. : $\sqrt{2}$, $\sqrt{8}$, $\sqrt{18}$, …
17. Which term of the A.P. 21, 18, 15, ... is zero?
18. If the sum of first 7 terms of an A.P. is 49 and that of the first 17 terms is 289, find the sum of n terms.
19. Find the sum of all the three digit numbers which are divisible by 7.
20. Find the sum of all the three digit numbers which are divisible by 9.
21. If S_n, the sum of n terms of an A.P., is given by $S_n = 3n^2 – 4n$, find the n^{th} term.
22. The sum of 4^{th} and 8^{th} terms of an A.P. is 24, and the sum of 6^{th} and 10^{th} terms is 44. Find the A.P.
23. The Sum of n terms of an A.P. is $5n^2 – 3n$. Find the A.P. Hence, find its 10^{th} term.
24. If $T_n = 3 + 4n$ then find the A.P. and hence, find the sum of its first 15 terms.
25. Which term of the A.P. 3, 15, 27, 39, ... will be 120 more than its 53^{rd} term?
26. Find the 31^{st} term of an A.P. whose 10^{th} term is 31 and the 15^{th} term is 66.
27. If the 8^{th} term of an A.P. is 37 and the 15^{th} term is 15 more than the 12^{th} term, find the A.P. Hence, find the sum of the first 15 terms of the A.P.
28. The 5^{th} and 15^{th} terms of an A.P. are 13 and -17 respectively. Find the sum of first 21 terms of the A.P.
29. The sum of n terms of an A.P. is $3n^2 + 5n$. Find the A.P. Hence, find its 16^{th} term.
30. In an A.P., the first term is 8, n^{th} term is 33 and sum of first n terms is 123. Find n and d, the common difference.