Write the first 5 terms of each sequence. Label each sequence $a_n =$

1. $a_n = 3n - 2$  
2. $a_n = -4n + 6$

3. $a_n = n^2 - 4n$  
4. $a_n = (-2n^2 + 1)(-1)^n$

5. $a_n = -2^n(-1)^{n+1}$  
6. $a_n = \frac{n-1}{n}$

7. $a_n = \frac{2^n}{3^n-1}$  
8. $a_n = \frac{n^2}{2n}$
9. \( a_n = \frac{(-1)^{n+1}}{2^n - 1} \)

10. \( a_n = \left( \frac{n + 1}{2n} \right)^{n-2} \)

11. \( a_n = \begin{cases} n - 1 & \text{if } n \text{ is even} \\ 2n + 1 & \text{if } n \text{ is odd} \end{cases} \)

12. \( a_n = \begin{cases} (-1)^n & \text{if } n \text{ is odd} \\ -2^n & \text{if } n \text{ is even} \end{cases} \)

13. Find the 10th term of the sequence is defined by \( a_n = 3n^2 - n \)

14. Find the 11th term of the sequence is defined by \( a_n = (5n - 3)(-1)^n \)

15. Find the 9th term of the sequence is defined by \( a_n = (-3n + 5)(-1)^n \)

16. Find the 12th term of the sequence is defined by \( a_n = (-3n + 5)(-1)^{n-1} \)
17. Find the 12th term of the sequence is
defined by \( a_n = \frac{(n + 3)(n - 2)}{6} \)

18. Find the 10th term of the sequence is
defined by \( a_n = \sqrt[3]{(n - 2)^2} \)

19. What term has the value of 21
if the sequence is defined by
\( a_n = 4n - 23 \)

20. What term has the value of -36
if the sequence is defined by
\( a_n = \frac{-3n}{2} + 12 \)

21. What term has the value of 5
if the sequence is defined by
\( a_n = \frac{3n + 28}{n} \)

22. What term has the value of 12
if the sequence is defined by
\( a_n = n^2 - 13 \)

23. What term has the value of 4
if the sequence is defined by
\( a_n = n^2 - 3n \)

24. What term has the value of 3
if the sequence is defined by
\( a_n = 2n^2 - 5n \)
Write the first 5 terms of the sequence that is described recursively. Label each sequence $a_n$.

25. $a_1 = 5$ and $a_n = a_{n-1} + 4$ for $n > 1$

26. $a_1 = 4$ and $a_n = a_{n-1} - 3$ for $n > 1$

27. $a_1 = 2$ and $a_n = 3 \cdot a_{n-1}$ for $n > 1$

28. $a_1 = 3$ and $a_n = \frac{a_{n-1}}{n}$ for $n > 1$

29. $a_1 = 2$ and $a_n = (a_{n-1} - 1)^2$ for $n > 1$

30. $a_1 = -4$ and $a_n = n - a_{n-1}$ for $n > 1$
31. \( a_1 = -2 \), \( a_2 = 3 \) and \\
a_n = a_{n-2} + a_{n-1} \text{ for } n > 2

32. \( a_1 = -1 \), \( a_2 = 2 \) and \\
a_n = a_{n-1} \cdot a_{n-2} \text{ for } n > 2

33. \( a_1 = 2 \), \( a_2 = 8 \) and \\
a_n = \frac{a_{n-1}}{a_{n-2}} \text{ for } n > 2

34. \( a_1 = 1 \), \( a_2 = 3 \) and \\
a_n = \frac{a_{n-1} + a_{n-2}}{2} \text{ for } n > 2

Write each sequence as a recursive formula.

35. \( 2, 5, 8, 11, 14, \ldots \) 

36. \( 1, -1, -3, -5, -7, -9, \ldots \)

37. \( 2, 5, 7, 12, 19, \ldots \)

38. \( 1, -1, 0, -1, -1, -2, \ldots \)
Write an expression that defines each sequence for the nth term \( a_n \), where \( n \in \mathbb{Z}^+ \) Assume the pattern shown continues.

39. \[ a_n = \frac{3}{2}, \frac{4}{4}, \frac{5}{6}, \frac{6}{8}, \frac{7}{10}, \ldots \]

40. \[ a_n = \frac{2}{1}, \frac{-3}{2}, \frac{4}{4}, \frac{-5}{8}, \frac{6}{16}, \frac{-7}{32}, \ldots \]

41. \[ a_n = \frac{2}{1}, \frac{4}{3}, \frac{8}{9}, \frac{16}{27}, \frac{32}{81}, \ldots \]

42. \[ a_n = \frac{-1}{1}, \frac{2}{7}, \frac{-4}{25}, \frac{8}{79}, \frac{16}{241}, \ldots \]

43. 3, -4, 5, -6, 7, -8, ....

44. -6, 8, -10, 12, -14, ....

45. \( \sqrt{2} \), 2, \( 2\sqrt{2} \), 4, \( 4\sqrt{2} \), 8, ....

46. \( \frac{3}{\sqrt{2}} \), \( \frac{3}{\sqrt{4}} \), 2, \( 2\frac{3}{\sqrt{2}} \), \( 2\frac{3}{\sqrt{4}} \), ....

47. \( \frac{32}{2}, \frac{16}{6}, \frac{8}{26}, \frac{4}{126}, \frac{2}{626} \), ....

48. 2, 6, 12, 20, 30, ....

49. 6, 12, 20, 30, 42, ....

50. 4, 12, 24, 40, 60, ....