

Write the first five terms of each sequence.

1.  $\{n\}$

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2.  $\{\frac{n}{n+2}\}$

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3.  $\{(\frac{4}{3})^n\}$

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4.  $\{\frac{n^2}{2^n}\}$

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5.  $\{n^2 + 1\}$

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6.  $\{(-1)^{n+1}\}$

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Given the patterns, write down the nth term of each sequence.

7.  $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \dots$

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8.  $1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \dots$

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9. 1, 1, 2, 3, 5, 8, 13, ...

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10.  $\frac{2}{3}, \frac{4}{9}, \frac{8}{27}, \frac{16}{81}, \dots$

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11. 1, -1, -1, 1, -1, ...

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12. 1, -2, 3, -4, 5, ...

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For the given recursive sequences, write the first five terms.

13.  $a_1 = 2; a_n = 3 + a_{n-1}$

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14.  $a_1 = -2; a_n = n + a_{n-1}$

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15.  $a_1 = 5; a_n = 2a_{n-1}$

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16.  $a_1 = 3; a_n = \frac{a_{n-1}}{n}$

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17.  $a_1 = 1; a_2 = 2; a_n = (a_{n-1})(a_{n-2})$

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18.  $a_1 = \sqrt{2}; a_n = \sqrt{2 + a_{n-1}}$

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Find the sum of the following series.

$$19. \sum_{i=1}^4 2i + 3$$

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$$20. \sum_{i=1}^{92} 11$$

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$$21. \sum_{i=1}^{40} 6i$$

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$$22. \sum_{i=1}^5 i^3$$

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$$23. \sum_{i=1}^{100} i^2$$

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$$24. \sum_{i=1}^{25} (i + i^2)$$

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25. Find the sum of the first 38 counting numbers.

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26. Find the sum of the squares of the first 76 counting numbers.

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