

Write the general term of each of the following sequences. Then write the next three terms:

1.  $1, 3, 5, 7 \dots$

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

3.  $\frac{1}{1}, \frac{2}{2}, \frac{3}{6}, \frac{4}{24} \dots$

4.  $2, -4, 8, -16 \dots$

What is the value of each of the following sums?

5.  $\sum_{n=0}^4 (2n + 1)$

6.  $\sum_{n=0}^{\infty} 3\left(\frac{1}{2}\right)^n$

7.  $\sum_{n=1}^{\infty} \frac{1}{3^n}$

Write the following explicit sequences as recursive sequences, including the  $a_0$  term:

8.  $a_n = 2n + 5$

9.  $a_n = 3\left(\frac{1}{2}\right)^n$

10.  $a_n = \frac{2^n}{6}$

**KEY**

Write the general term of each of the following sequences. Then write the next three terms:

1.  $1, 3, 5, 7 \dots$   $2n-1; 9, 11, 13$

2.  $1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8} \dots$   $\frac{1}{2^n}; \frac{1}{16}, \frac{1}{32}, \frac{1}{64}$

3.  $\frac{1}{1}, \frac{2}{2}, \frac{3}{6}, \frac{4}{24} \dots$   $\frac{n}{n!}; \frac{5}{120}, \frac{6}{720}, \frac{7}{5040}$

4.  $2, -4, 8, -16 \dots$   $-1 \cdot (-2)^n; 32, -64, 128$

What is the value of each of the following sums?

5.  $\sum_{n=0}^4 (2n + 1)$   
 $= 1 + 3 + 5 + 7 + 9 = 25$

6.  $\sum_{n=0}^{\infty} 3\left(\frac{1}{2}\right)^n$   
 $= \frac{3}{1 - \frac{1}{2}} = \frac{3}{\frac{1}{2}} = 3 \cdot 2 = 6$

7.  $\sum_{n=1}^{\infty} \frac{1}{3^n}$   
 $= \frac{\frac{1}{3}}{1 - \frac{1}{3}} = \frac{\frac{1}{3}}{\frac{2}{3}} = \frac{1}{3} \cdot \frac{3}{2} = \frac{1}{2}$

Write the following explicit sequences as recursive sequences, including the  $a_0$  term:

8.  $a_n = 2n + 5$   
 $a_0 = 5, a_n = a_{n-1} + 2$

9.  $a_n = 3\left(\frac{1}{2}\right)^n$   
 $a_0 = 3, a_n = \frac{1}{2}a_{n-1}$

10-Min Sprint: Sequences

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$$10. a_n = \frac{2^n}{6} \quad a_0 = \frac{1}{6}, a_n = 2 \cdot a_{n-1}$$