Bellwork Alg 2 Wednesday, September 11, 2019

Find the first six terms of each sequence.

1. $f(1) = 3$
   $f(2) = 2$
   $f(n) = 5 \cdot f(n-2) - 4 \cdot f(n-1)$

2. $t_1 = 4$
   $t_2 = 3$
   $t_3 = 2$
   $t_n = (t_{n-2})^2 - (t_{n-1})(t_{n-3})$

3. Find the sum of this series: $-9 + -14 + -19 + -24 + \ldots + -84$

4. Find the sum of the first 16 terms of the sequence defined by the following formula: $t_n = 11 + 6(n-1)$

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Answers

Find the first six terms of each sequence.

1. $f(1) = 3$
   $f(2) = 2$
   $f(n) = 5 \cdot f(n-2) - 4 \cdot f(n-1)$

$3, 2, 7, -18, 107, -518$

$t_1, t_2, t_3, t_4, t_5, t_6$

$t_3 = 5 \cdot t_1 - 4 \cdot t_2 = 5(3) - 4(2) = 7$

$t_4 = 5 \cdot t_2 - 4 \cdot t_3 = 5(2) - 4(7) = -18$

$t_5 = 5 \cdot t_3 - 4 \cdot t_4 = 5(7) - 4(-18) = 107$

$t_6 = 5 \cdot t_4 - 4 \cdot t_5 = 5(-18) - 4(107) = -518$

2. $t_1 = 4$
   $t_2 = 3$
   $t_3 = 2$
   $t_n = (t_{n-2})^2 - (t_{n-1})(t_{n-3})$

$4, 3, 2, 1, 1, -1$

$t_1, t_2, t_3, t_4, t_5, t_6$

$t_4 = t_2^2 - t_3 \cdot t_1 = 3^2 - 4 \cdot 2 = 1$

$t_5 = t_3^2 - t_4 \cdot t_2 = 2^2 - 1 \cdot 3 = 1$

$t_6 = t_4^2 - t_5 \cdot t_3 = 1^2 - 1 \cdot 2 = -1$

3. Find the sum of this series: $-9 + -14 + -19 + -24 + \ldots + -84$

Arithmetic $d = -5$

$t_1 = -9$ $t_n = -84$

$S_n = \frac{n}{2}(t_1 + t_n)$

$= \frac{16}{2}(-9 + -84)$

$S_{16} = -744$

Find n: $t_n = t_1 + d(n-1)$

$-84 = -9 + -5(n-1)$

$+9 \quad +9$

$\frac{-75}{-5} = \frac{-5(n-1)}{-5}$

$15 = n - 1$

$+1 \quad +1$

$n = 16$ 16 terms

4. Find the sum of the first 16 terms of the sequence defined by the following formula: $t_n = 11 + 6(n-1)$

$n = 16$

$S_{16} = \frac{16}{2}(t_1 + t_{16})$

$= \frac{16}{2}(11 + 101)$

$= 8(112)$

$S_{16} = 896$

$t_1 = 11 + 6(1-1) = 11 + 6(0) = 11$

$t_{16} = 11 + 6(16-1) = 11 + 6(15) = 101$