Bellwork Wednesday, December 20, 2017

1. Write the recursive formula for each.

a) $5, -9, -23, -37, \ldots$

b) 118098, 13122, 1458, 162, ...

2. Write the explicit formula for each.

a) $487, 476, 465, 454, \ldots$

b) $\frac{3}{11}, \frac{5}{12}, \frac{7}{13}, \frac{9}{14}, \ldots$

3. Find the 50th term of this sequence: $23, 31, 39, 47, \ldots$

4. An Arithmetic Sequence has the following 11th and 20th term. Find the 40th term.

$a_{11} = 78$ $a_{20} = 132$ $a_{40} =$

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Answers

1. Write the recursive formula for each.

a) $5, -9, -23, -37, \ldots$

Arithmetic Seq $d = -14$

$a_1 = 5$

$a_n = a_{n-1} - 14$

b) 118098, 13122, 1458, 162, ...

Geometric Sequence $r = \frac{1}{9}$

$a_1 = 118098$

$a_n = (a_{n-1})\left(\frac{1}{9}\right)$

2. Write the explicit formula for each.

a) $487, 476, 465, \cancel{445}\ 454, \ldots$

Arithmetic Seq $d = -11$

$a_n = 487 - 11(n-1)$

b) $\frac{3}{11}, \frac{5}{12}, \frac{7}{13}, \frac{9}{14}, \ldots$ (n = 1 2 3 4)

numerator consec odds prob either $2n+1$ or $2n-1$

denom are consec integers $n+10$

$a_n = \frac{2n+1}{n+10}$

3. Find the 50th term of this sequence: $23, 31, 39, 47, \ldots$

Arithmetic Sequence $d = 8$

explicit formula: $a_n = 23 + 8(n-1)$

$a_{50} = 23 + 8(50-1) = 415$

4. An Arithmetic Sequence has the following 11th and 20th term. Find the 40th term.

$a_{11} = 78$ $a_{20} = 132$ $a_{40} =$

$132 - 78 = 54$

$d = \frac{54}{9} = 6$ (20 − 11)

$a_1 = a_{11} - 6(10) = 78 - 60$

$a_1 = 18$

explicit formula: $a_n = 18 + 6(n-1)$

$a_{40} = 18 + 6(40-1)$

$a_{40} = 252$