Algebra 2

11-02 Analyzing Arithmetic Sequences and Series

Arithmetic Sequences

- Common _____ (d) between successive terms
- _____ the same number each time
- 3, 6, 9, 12, 15, …
  - d = _____

Is it arithmetic?

−10, −6, −2, 0, 2, 6, 10, …

1, −1, −3, −5, −7, …

Formula for n^{th} term

$$a_n = a_1 + (n-1)d$$

- _____

Write a rule for the n^{th} term

32, 47, 62, 77, …

51, 48, 45, 42, …

One term of an arithmetic sequence is $a_8 = 50$. The common difference is 0.25. Write the rule for the n^{th} term.

$a_{11} = 43,\ d = 5$

Two terms of an arithmetic sequence are $a_5 = 10$ and $a_{30} = 110$. Write a rule for the n^{th} term.

Sum of a finite arithmetic series

Formula

$$S_n = n\left(\frac{a_1 + a_n}{2}\right)$$

Consider the arithmetic series 20 + 18 + 16 + 14 + ⋯
Find the sum of the first 25 terms.

$$\sum_{i=1}^{20}(2i - 3)$$

You put money in a jar at the end of each week. The first week you put $2 in the jar, and each subsequent week you put $2 more than the previous week in the jar.

a. Write a rule for the amount of money you put in the jar at the end of the *n*th week.

b. How much money is in the jar after 9 weeks?

608 #1, 5, 9, 13, 17, 19, 21, 25, 29, 33, 37, 41, 43, 45, 50, 63, 65, 67, 72, 75 = 20