Advanced Functions – Review for Arithmetic Quiz WS Name: Key

Directions – Each problem below is arithmetic. Complete each one and show your work!

1.) What are the next four terms in the sequence
23, 28, 33, 38, 43, 48, 53, … ?

28−23 = 5 33−28 = 5

2.) What is the eighteenth term for the sequence
94, 106, 118, … ?

106 − 94 = 12 118 − 106 = 12

$a_{18} = 94 + 12(18-1)$

$a_{18} = 298$

3.) The thirty-fourth term of a sequence is – 306 and the common difference is – 8. What is the second term of the sequence?

$a_{34} = -306, d = -8 \rightarrow$ ① $a_1 = ?$ ② $a_2 = ?$

① $-306 = a_1 - 8(34-1)$

$-306 = a_1 - 264$

$+264 \quad +264$

$a_1 = -42$

② $a_2 = -42 - 8$

$a_2 = -50$

4.) What are the three arithmetic means for the sequence between 34 and 22?

34, 31, 28, 25, 22

a_1, a_2, a_3, a_4, a_5

$22 = 34 + d(5-1)$

$22 = 34 + 4d$

$-12 = 4d$

$d = -3$

5.) The 23rd term of a sequence is 358 and the 15th term of the same sequence is 230. What is the first term?

$a_{23} = 358$

$a_{15} = 230$

① $358 = a_1 + 22d$

$230 = a_1 + 14d$

$128 = 8d$

$d = 16$

② $358 = a_1 + 22(16)$

$358 = a_1 + 352$

$a_1 = 6$

6.) What is the sum of the first six terms for the series of $a_n = 3n + 7$?

$a_1 = 3(1) + 7 = 10$

$a_2 = 3(2) + 7 = 13$

$a_3 = 3(3) + 7 = 16$

$a_4 = 3(4) + 7 = 19$

$a_5 = 3(5) + 7 = 22$

$a_6 = 3(6) + 7 = 25$

$S_6 = 105$

7.) What is the sum of first 11 terms if the first term is 16 and the common difference is – 4?

$n = 11, a_1 = 16, d = -4 \rightarrow S_n = ?$

① $a_{11} = 16 - 4(11-1)$

$a_{11} = -24$

② $S_{11} = \frac{11}{2}(16 - 24)$

$S_{11} = -44$

8.) What is the sum of the arithmetic series
$25 + 39 + \ldots + 179$?

a_1, $a_n \rightarrow S_n = ?$

$39 - 25 \Rightarrow d = 14$

① $179 = 25 + 14(n-1)$

$154 = 14n - 14$

$168 = 14n$

$n = 12$

② $S_{12} = \frac{12}{2}(25 + 179)$

$S_{12} = 1224$

9.) The sum of first 23 terms is 3,496 and the first term is 9. What is the last term in the series?

$S_{23} = 3496, a_1 = 9 \rightarrow \rightarrow a_n = ?$

$2 \cdot 3496 = \frac{23}{2}(9 + a_n) \cdot 2$

$6992 = 23(9 + a_n)$

$6992 = 207 + 23a_n$

$6785 = 23a_n \rightarrow a_n = 295$

10.) What is the sum for $\sum_{n=3}^{10} (5n+4)$? linear eq

$n = 10 - 3 + 1 = 8$

$a_1 = 5(3) + 4 = 19$

$a_n = 5(10) + 4 = 54$

$S_8 = \frac{8}{2}(19 + 54)$

$S_8 = 292$