Algebra 2 Name_____ ID: 1

Arithmeitc Sequence and Series

Date_____ Period____

Determine if the sequence is arithmetic. If it is, find the common difference.

1) 4, 16, 36, 64, ...

2) −14, −114, −214, −314, ...

3) −21, −121, −221, −321, ...

4) 39, 59, 79, 99, ...

Given the explicit formula for an arithmetic sequence find the first five terms, the 52nd term, and the term named in the problem.

5) $a_n = 12 - 8n$
Find a_{20}

6) $a_n = -2 + 2n$
Find a_{25}

7) $a_n = -1 - 30n$
Find a_{23}

8) $a_n = 24 - 3n$
Find a_{27}

Given two terms in an arithmetic sequence find the first five terms, the 52nd term, and the term named in the problem.

9) $a_{12} = -117$ and $a_{36} = -357$

Find a_{25}

A) First Five Terms: −7, 3, 13, 23, 33
$a_{52} = 503$
$a_{25} = 233$

B) First Five Terms: −7, −17, −27, −37, −47
$a_{52} = -517$
$a_{25} = -247$

C) First Five Terms: −6, 4, 14, 24, 34
$a_{52} = 504$
$a_{25} = 234$

D) First Five Terms: −6, −16, −26, −36, −46
$a_{52} = -516$
$a_{25} = -246$

10) $a_{17} = -13.7$ and $a_{36} = -15.6$

Find a_{28}

A) First Five Terms: −12.1, −12.2, −12.3, −12.4, −12.5
$a_{52} = -17.2$
$a_{28} = -14.8$

B) First Five Terms: −12.1, −11.2, −10.3, −9.4, −8.5
$a_{52} = 33.8$
$a_{28} = 12.2$

C) First Five Terms: −12.1, −13.2, −14.3, −15.4, −16.5
$a_{52} = -68.2$
$a_{28} = -41.8$

D) First Five Terms: −11.2, −10.3, −9.4, −8.5, −7.6
$a_{52} = 34.7$
$a_{28} = 13.1$

Given the recursive formula for an arithmetic sequence find the common difference and the explicit formula.

11) $a_n = a_{n-1} + 30$
$a_1 = 23$

12) $a_n = a_{n-1} - 4$
$a_1 = 14$

Evaluate the related series of each sequence.

13) 9, 17, 25, 33, 41, 49

14) 10, 12, 14, 16

Evaluate each arithmetic series described.

15) $\sum_{n=1}^{20} (9n - 19)$

16) $\sum_{n=1}^{14} (10 - 5n)$

Determine the number of terms *n* in each arithmetic series.

17) $\sum_{m=1}^{n} (2 - 6m) = -1900$

18) $\sum_{k=1}^{n} (9k - 8) = 960$

Algebra 2 Name_____ ID: 1

Arithmeitc Sequence and Series

Date_____ Period____

Determine if the sequence is arithmetic. If it is, find the common difference.

1) 4, 16, 36, 64, ...

Not arithmetic

2) −14, −114, −214, −314, ...

$d = -100$

3) −21, −121, −221, −321, ...

$d = -100$

4) 39, 59, 79, 99, ...

$d = 20$

Given the explicit formula for an arithmetic sequence find the first five terms, the 52nd term, and the term named in the problem.

5) $a_n = 12 - 8n$

Find a_{20}

First Five Terms: 4, −4, −12, −20, −28

$a_{52} = -404$

$a_{20} = -148$

6) $a_n = -2 + 2n$

Find a_{25}

First Five Terms: 0, 2, 4, 6, 8

$a_{52} = 102$

$a_{25} = 48$

7) $a_n = -1 - 30n$

Find a_{23}

First Five Terms: −31, −61, −91, −121, −151

$a_{52} = -1561$

$a_{23} = -691$

8) $a_n = 24 - 3n$

Find a_{27}

First Five Terms: 21, 18, 15, 12, 9

$a_{52} = -132$

$a_{27} = -57$

Given two terms in an arithmetic sequence find the first five terms, the 52nd term, and the term named in the problem.

9) $a_{12} = -117$ and $a_{36} = -357$

Find a_{25}

A) First Five Terms: −7, 3, 13, 23, 33
$a_{52} = 503$
$a_{25} = 233$

*B) First Five Terms: −7, −17, −27, −37, −47
$a_{52} = -517$
$a_{25} = -247$

C) First Five Terms: −6, 4, 14, 24, 34
$a_{52} = 504$
$a_{25} = 234$

D) First Five Terms: −6, −16, −26, −36, −46
$a_{52} = -516$
$a_{25} = -246$

10) $a_{17} = -13.7$ and $a_{36} = -15.6$

Find a_{28}

*A) First Five Terms: −12.1, −12.2, −12.3, −12.4, −12.5
$a_{52} = -17.2$
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$a_{52} = -68.2$
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D) First Five Terms: −11.2, −10.3, −9.4, −8.5, −7.6
$a_{52} = 34.7$
$a_{28} = 13.1$

Given the recursive formula for an arithmetic sequence find the common difference and the explicit formula.

11) $a_n = a_{n-1} + 30$
$a_1 = 23$

Common Difference: $d = 30$
Explicit: $a_n = -7 + 30n$

12) $a_n = a_{n-1} - 4$
$a_1 = 14$

Common Difference: $d = -4$
Explicit: $a_n = 18 - 4n$

Evaluate the related series of each sequence.

13) 9, 17, 25, 33, 41, 49

174

14) 10, 12, 14, 16

52

Evaluate each arithmetic series described.

15) $\sum_{n=1}^{20} (9n - 19)$

1510

16) $\sum_{n=1}^{14} (10 - 5n)$

−385

Determine the number of terms *n* in each arithmetic series.

17) $\sum_{m=1}^{n} (2 - 6m) = -1900$

25

18) $\sum_{k=1}^{n} (9k - 8) = 960$

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