Algebra 1   Name_____ ID: 1

Geometric sequences   Date_____ Period_____

Warm up: 1-6

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

1) −13, −213, −413, −613, ...

Determine if the sequence is arithmetic. If it is, find the common difference, the explicit formula, and the recursive formula.

2) 25, 35, 45, 55, ...

Given the explicit formula for an arithmetic sequence find the first five terms.

3) $a_n = 39 + (n-1) \cdot -10$

Given the recursive formula for an arithmetic sequence find the first five terms.

4) $a_n = a_{n-1} + 100$
   $a_1 = 6$

Given the explicit formula for an arithmetic sequence find the 52nd term.

5) $a_n = -27 + (n-1) \cdot -8$

Find the 52nd term and the explicit formula.

6) −21, −18, −15, −12, ...

Determine if the sequence is geometric. If it is, find the common ratio and the three terms in the sequence after the last one given.

7) −1, −4, −16, −64, ...   8) −3, 6, −12, 24, ...

9) 2, 6, 18, 54, ...   10) 1, 3, 9, 27, ...

11) 2, −8, 32, −128, ...   12) −2, −6, −18, −54, ...

Determine if the sequence is geometric. If it is, find the explicit formula and the recursive formula.

13) 2, 8, 32, 128, ...   14) −2, −6, −18, −54, ...

15) −19, −29, −39, −49, ...   16) 3, −18, 108, −648, ...

17) 2, −12, 72, −432, ...   18) −2, −12, −72, −432, ...

Algebra 1   Name_____ ID: 1

Geometric sequences
Date_____ Period____

Warm up: 1-6

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

1) $-13, -213, -413, -613, \ldots$

Determine if the sequence is arithmetic. If it is, find the common difference, the explicit formula, and the recursive formula.

2) $25, 35, 45, 55, \ldots$

Given the explicit formula for an arithmetic sequence find the first five terms.

3) $a_n = 39 + (n-1) \cdot -10$

Given the recursive formula for an arithmetic sequence find the first five terms.

4) $a_n = a_{n-1} + 100$
   $a_1 = 6$

Given the explicit formula for an arithmetic sequence find the 52nd term.

5) $a_n = -27 + (n-1) \cdot -8$

Find the 52nd term and the explicit formula.

6) $-21, -18, -15, -12, \ldots$

Determine if the sequence is geometric. If it is, find the common ratio and the three terms in the sequence after the last one given.

7) $-1, -4, -16, -64, \ldots$ 8) $-3, 6, -12, 24, \ldots$

9) $2, 6, 18, 54, \ldots$ 10) $1, 3, 9, 27, \ldots$

11) $2, -8, 32, -128, \ldots$ 12) $-2, -6, -18, -54, \ldots$

Determine if the sequence is geometric. If it is, find the explicit formula and the recursive formula.

13) $2, 8, 32, 128, \ldots$ 14) $-2, -6, -18, -54, \ldots$

15) $-19, -29, -39, -49, \ldots$ 16) $3, -18, 108, -648, \ldots$

17) $2, -12, 72, -432, \ldots$ 18) $-2, -12, -72, -432, \ldots$

Geometric sequences

Warm up: 1-6

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

1) $-13,\ -213,\ -413,\ -613,\ ...$
   $d = -200$

Determine if the sequence is arithmetic. If it is, find the common difference, the explicit formula, and the recursive formula.

2) $25,\ 35,\ 45,\ 55,\ ...$ Common Difference: $d = 10$
   Explicit: $a_n = 15 + 10n$

Given the explicit formula for an arithmetic sequence find the first five terms.
   Recursive: $a_n = a_{n-1} + 10$

3) $a_n = 39 + (n-1) \cdot -10$ $a_1 = 25$
   $39,\ 29,\ 19,\ 9,\ -1$

Given the recursive formula for an arithmetic sequence find the first five terms.

4) $a_n = a_{n-1} + 100$
   $a_1 = 6$
      $6,\ 106,\ 206,\ 306,\ 406$

Given the explicit formula for an arithmetic sequence find the 52nd term.

5) $a_n = -27 + (n-1) \cdot -8$ $a_{52} = -435$

Find the 52nd term and the explicit formula.

6) $-21,\ -18,\ -15,\ -12,\ ...$ $a_{52} = 132$
                        Explicit: $a_n = -24 + 3n$

Determine if the sequence is geometric. If it is, find the common ratio and the three terms in the sequence after the last one given.

7) $-1,\ -4,\ -16,\ -64,\ ...$ Common Ratio: $r = 4$ 8) $-3,\ 6,\ -12,\ 24,\ ...$ Common Ratio: $r = -2$
                     Next 3 terms: $-256,\ -1024,\ -4096$ Next 3 terms: $-48,\ 96,\ -192$

9) $2,\ 6,\ 18,\ 54,\ ...$ Common Ratio: $r = 3$ 10) $1,\ 3,\ 9,\ 27,\ ...$ Common Ratio: $r = 3$
              Next 3 terms: $162,\ 486,\ 1458$ Next 3 terms: $81,\ 243,\ 729$

11) $2,\ -8,\ 32,\ -128,\ ...$ Common Ratio: $r = -4$ 12) $-2,\ -6,\ -18,\ -54,\ ...$ Common Ratio: $r = 3$
                  Next 3 terms: $512,\ -2048,\ 8192$ Next 3 terms: $-162,\ -486,\ -1$

Determine if the sequence is geometric. If it is, find the explicit formula and the recursive formula.

13) $2,\ 8,\ 32,\ 128,\ ...$ Explicit: $a_n = 2 \cdot 4^{n-1}$ 14) $-2,\ -6,\ -18,\ -54,\ ...$ Explicit: $a_n = -2 \cdot 3^{n-1}$
                     Recursive: $a_n = a_{n-1} \cdot 4$ Recursive: $a_n = a_{n-1} \cdot 3$
15) $-19,\ -29,\ -39,\ -49,\ ...$ $a_1 = 2$ 16) $3,\ -18,\ 108,\ -648,\ ...$ Explicit: $a_n = 3 \cdot (-6)^{n-1}$
     Not geometric   Recursive: $a_n = a_{n-1} \cdot -6$
17) $2,\ -12,\ 72,\ -432,\ ...$ Explicit: $a_n = 2 \cdot (-6)^{n-1}$ 18) $-2,\ -12,\ -72,\ -432,\ ...$ Explicit: $a_n = -2 \cdot 6^{n-1}$
                  Recursive: $a_n = a_{n-1} \cdot -6$ Recursive: $a_n = a_{n-1} \cdot 6$