Practice Quiz

For each sequence, state if it is arithmetic, geometric, or neither.

1) $125,\ 25,\ 5,\ 1,\ \dfrac{1}{5},\ ...$

   A) Neither   B) Arithmetic
   C) Geometric

2) $1,\ 2,\ 4,\ 8,\ 16,\ ...$

   A) Arithmetic   B) Neither
   C) Geometric

3) $4,\ 6,\ 9,\ 13,\ 18,\ ...$

   A) Arithmetic   B) Neither
   C) Geometric

4) $-9,\ 91,\ 191,\ 291,\ 391,\ ...$

   A) Geometric   B) Arithmetic
   C) Neither

For each arithmetic sequence, find the common difference, the explicit formula, and the recursive formula.

5) $-10,\ -30,\ -50,\ -70,\ ...$

   $d =$

   explicit:

   recursive:

6) $-20,\ -10,\ 0,\ 10,\ ...$

   $d =$

   explicit:

   recursive:

For each geometric sequence, find the common ratio, the explicit formula, and the recursive formula.

7) $1,\ 6,\ 36,\ 216,\ ...$

   $r =$

   explicit:

   recursive:

8) $4,\ 12,\ 36,\ 108,\ ...$

   $r =$

   explicit:

   recursive:

Evaluate each series.

9) $\displaystyle\sum_{n=1}^{7} (n + 100)$

10) $\displaystyle\sum_{a=1}^{6} a(a - 1)$

11) $\displaystyle\sum_{n=0}^{6} 3n^2$

12) $\displaystyle\sum_{m=3}^{8} m(m - 1)$

Rewrite each series using sigma notation.

13) $5 + 10 + 15 + 20 + 25 + 30$

14) $25 + 36 + 49 + 64 + 81$

15) $4 + 16 + 64 + 256 + 1024 + 4096$

16) $4 + 5 + 6 + 7 + 8 + 9$

Evaluate.

17) $\dfrac{20!}{17!}$

18) $\dfrac{(n + 1)!}{n!}$

Evaluate each limit.

19) $\displaystyle\lim_{n \to \infty} (n^4 - 2n^2 + 3)$

20) $\displaystyle\lim_{n \to \infty} (-n^3 + n^2 + 5n - 2)$

21) $\displaystyle\lim_{n \to -\infty} \dfrac{-n - 2}{n^2 + 2n + 2}$

22) $\displaystyle\lim_{n \to \infty} \dfrac{3n}{n + 2}$

23) $\displaystyle\lim_{n \to -\infty} \dfrac{3n^2}{n^2 - 9}$

24) $\displaystyle\lim_{n \to \infty} \cos \dfrac{1}{n}$