Arithmetic and Geometric Sequences

REVMATH

Arithmetic sequence

$$T(n) = a + (n-1)d$$

$$S(n) = \frac{n}{2}[2a + (n-1)d]$$

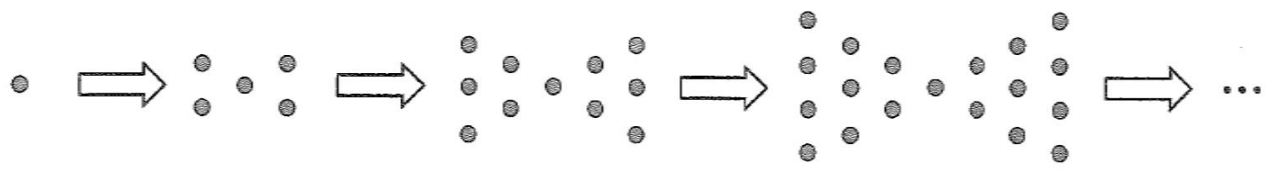
Geometric sequence

$$T(n) = ar^{n-1}$$

$$S(n) = \frac{a(r^n - 1)}{r - 1}$$

$$\text{Sum to infinity} = \frac{a}{1-r}, -1 < r < 1$$

In the figure, the 1st pattern consists of 1 dot. For any positive integer n, the $(n+1)$th pattern is formed by adding $(2n+2)$ dots to the nth pattern. Find the number of dots in the 7th pattern.



A. 41

B. 55

C. 71

D. 161

In the following sequence, the 1st term, the 2nd term and the 3rd term are 1 , 2 and 3 respectively. For any positive integer n , the $(n+3)$th term is the sum of the $(n+2)$th term, the $(n+1)$th term and the nth term. Find the 9th term of the sequence.

1 , 2 , 3 , 6 , 11 , ...

A. 51

B. 68

C. 125

D. 230

Which of the following are arithmetic sequences?

I. $\pi^{30}, \pi^{45}, \pi^{60}$

II. $30\pi, 45\pi, 60\pi$

III. $\pi - 30, \pi - 45, \pi - 60$

A. I and II only

B. I and III only

C. II and III only

D. I , II and III

If $m > 1$, which of the following are geometric sequences?

I. 2^m , 2^{2m} , 2^{3m} , 2^{4m}

II. m , $2m^2$, $3m^4$, $4m^8$

III. $\log m$, $\log m^2$, $\log m^4$, $\log m^8$

A. I and II only

B. I and III only

C. II and III only

D. I , II and III

The first negative term in the arithmetic sequence 2006 , 1998 , 1990 , ... is

A. -8 .

B. -6 .

C. -4 .

D. -2 .

If the sum of the first n terms of a sequence is n^2+2n, then the 5th term of the sequence is

A. 9.

B. 11.

C. 13.

D. 35.

The sum of all the positive terms in the geometric sequence $4,-2,1,\ldots$ is

A. 8.

B. $\frac{8}{3}$.

C. $\frac{16}{3}$.

D. $\frac{16}{5}$.

The sum of the first 2 terms of a geometric sequence is 8 and the 3rd term of the sequence is 18 . Find the 1st term of the sequence.

A. 2

B. 3

C. 2 or 32

D. 3 or 32

If $a-6$, a, $a+5$ is a geometric sequence, then the common ratio of the sequence is

A. -30.

B. $\frac{5}{6}$.

C. $\frac{6}{5}$.

D. 6.

If $h, 5, k$ are the first 3 terms of an arithmetic sequence and $h, 4, k$ are the first 3 terms of a geometric sequence, then $h^2 + k^2 =$

A. 36 .

B. 68 .

C. 84 .

D. 100 .