


Sum of terms of Geometric Series



Proof:

Examples

1. Find the sum of the first 10 terms of the following sequences

a)

$$3, 6, 12, 24, 48, \dots$$

b)

$$4, 2, 1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \dots$$

Example

Find the least value of n such that the sum of $1 + 2 + 4 + 8 + \dots$ to n terms would exceed 2 000 000.

Test Your Understanding

The second and third terms of a geometric series are 192 and 144 respectively.

For this series, find

- (a) the common ratio, (2)
- (b) the first term, (2)
- (d) the smallest value of n for which the sum of the first n terms of the series exceeds 1000. (4)

Extension

MAT 2010 1B]

The sum of the first $2n$ terms of

$$1, 1, 2, \frac{1}{2}, 4, \frac{1}{4}, 8, \frac{1}{8}, 16, \frac{1}{16}, \dots$$

is

A) $2^n + 1 - 2^{1-n}$

B) $2^n + 2^{-n}$

C) $2^{2n} - 2^{3-2n}$

D) $\frac{2^n - 2^{-n}}{3}$