Precalculus

10-04 Geometric Sequences and Series

Geometric Sequence

- Common _____(r)
- 1, 3, 9, 27, 81, 243, …

Rule for n^{th} term

$$a_n = a_1 r^{n-1}$$

Find the rule for $6, \ -2, \frac{2}{3}, \ \ldots$

The 2nd term of a geometric sequence is −18, the 5th term is 2/3. Find the rule for the n^{th} term.

Geometric Series

$$S_n = a_1\left(\frac{1-r^n}{1-r}\right)$$

$$S_\infty = \frac{a_1}{1-r}$$

where $|r| < 1$

Evaluate

$$\sum_{n=1}^{7} 2^{n-1}$$

Evaluate

$5 + 0.5 + 0.05 + 0.005 + \cdots$

$$\sum_{n=0}^{\infty} 5\left(\frac{1}{2}\right)^n$$