Section 12.3 Geometric Series

# Objective 1: Finite Geometric Series

A **series** is the sum of the terms of a sequence. A **geometric series** is a series with terms that form a geometric sequence. A **finite geometric series** is the sum of the first n terms of a geometric sequence.

**Sum of a Finite Geometric Series:**

The sum of the first $n$ terms of a geometric sequence is given by

$S\_{n}=a\_{1}⋅\frac{1-r^{n}}{1-r}$,

where $a\_{1}$ is the first term and $r$ is the common ratio of the sequence.

a. Find the sum of the first $10$ terms of a geometric sequence if the first term is $-7.5$ and the common ratio is $4$.

b. Find the sum of the first $7$ terms of the geometric series $3+15+75+…$

c. Consider a job offer with a starting annual salary of $\$32,000$ with a guaranteed raise of $3\%$ each year. What is the total amount you would earn if you work there for $15$ years?