Ch. 27 - BOARD PROBLEMS

FIND THE COMMON DIFFERENCE, the 52nd term, AND THE FORMULA.

① $2, \frac{5}{2}, 3, \frac{7}{2} \ldots$

$a_1 = 2 \quad d = \frac{1}{2}$

$a_n = 2 + \frac{1}{2}(n-1)$

$a_{52} = 2 + \frac{1}{2}(\ ) =$

② $34, 28, 22, 16$

$a_1 = 34 \quad d = -6$

$a_n = 34 - 6(n-1)$

$a_{52} = -272$

FIND THE MISSING TERMS.

③ $\ldots, \frac{3}{2}, \_\_, \_\_, 0 \ldots$ ④ $\ldots 3.4, \_, \_, -2 \ldots$

EVALUATE THE SERIES.

⑤ $\sum_{m=1}^{10} \left(-2 + \frac{4}{3}m\right)$ ⑥ $\sum_{m=1}^{35} (7m - 12)$

7). A farmer has 4000 m of fencing; he wants to enclose a rectangular garden plot That borders the river. What is the largest area he can enclose? What are the Length and Width??

Ch. 27 - Geometric Sequence & Series

Geometric Sequence – have common ratio instead of common difference (Arithmetic)

$$r = \frac{a_2}{a_1} = \frac{a_n}{a_{n-1}}$$

Ex 1. $a_1 = 5$ $r = -2$ describe the first 5 terms.

Ex. 2 $a_1 = 2$, $a_2 = 6$, find the first 5 terms

$r =$ ___

Practice Problems 1

1) $\{a_5\} =$

$a_1 = 9$ $r = \frac{1}{3}$

2) $a_1 = \sqrt{2}$ $a_2 = 4$

$\{a_5\} =$

Find a specific term in a sequence.

Ex. 3 $S_n = \{a_1 \cdot r^{n-1}\}$

Find the 4^{th} term of a sequence.

$a_1 = 5$, $r = -2$

$S_4 =$

Ex 4 Find the 10^{th} term of $\{1, 2, 4, 8 \ldots\}$

$a_1 =$ $r =$

$S_{10} =$

PRACTICE PROBLEMS $S_n = \{a_1 \cdot r^{n-1}\}$

① FIND THE 9^{th} term of $\{2, -4, 8\}$

② FIND THE 12^{th} term $\{-3, 1, -\frac{1}{3}\}$

③ FIND THE 7^{th} TERM $\{\frac{1}{1000}, \frac{1}{100}, \frac{1}{10}\}$

GEOMETRIC SERIES

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

$$\sum_{k=1}^{5} [3^k] =$$

$$\sum_{n=1}^{8} \{2^n\} =$$

PRACTICE PROBLEMS

Compute the series.

1) $\sum_{k=1}^{5} \{2^{k-1}\}$

2) $\sum_{b=1}^{5} \{10^{2-b}\}$

3) $\sum_{M=1}^{5} \left(\frac{2}{3}\right)^{M-2}$

Answer the question.

1. What is the definition of common ratio?

Find the first five terms of each geometric sequence.

2. $a_1 = x, r = 2x$

3. $a_1 = 100, r = 1/10$

Answer the questions.

4. Write the formula for finding the specific term of a geometric sequence.

5. Find the 10th term with $a_1 = 2$ and $r = -2$.

6. Find the 7th term with $a_1 = 1/1{,}000$ and $r = 10$.

7. Find the 6th term with $a_1 = -1/3$ and $a_2 = 1$.

8. Write the formula for finding the sum of a geometric sequence.

Compute the series.

9. $\sum_{k=1}^{11} \{4^{k-4}\}$

10. $\sum_{k=1}^{7} \{ \frac{3}{10}^{k-2} \}$

11. $\sum_{k=3}^{5} \left\{ \left(\frac{-1}{2}\right)^k \right\}$

12. $\sum_{k=-3}^{3} \{.01^k\}$