



SECTION 2.5 SIGMA NOTATIONS AND SUMMATION

$$\sum_{n=1}^{100} a(3)^{n-1}$$

- i) Concept of Sigma Notation, number of terms
- ii) Solving for Sums using Sigma Notations
- iii) Problems involving Sigma Notations
- iv) Sums of Sequences involving consecutive squares, cubes, and powers

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D) WHAT IS A SIGMA NOTATION:

- o A notation that represents a series (sum)

$$\sum_{k=a}^b f(k)$$

ie: $\sum_{k=1}^5 f(k) =$

$\sum_{k=5}^9 f(k) =$

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EX: EXPAND AND EVALUATE THE FOLLOWING SERIES:

a) $\sum_{k=2}^6 2^k =$

b) $\sum_{k=4}^7 4(-3)^{k-1} =$

c) $\sum_{k=2}^5 \frac{3}{4^k} =$

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- When a sigma notation contain too many terms, use the formulas from the Geometric series to find the sum

i.e) $\sum_{k=5}^{60} \left(\frac{2}{3}\right)^k =$



EX: EVALUATE THE FOLLOWING SERIES:

a) $\sum_{k=3}^{23} 6\left(-\frac{1}{2}\right)^{k-1} =$

b) $\sum_{k=-10}^{12} 3(2)^k =$



PRACTICE: EVALUATE EACH OF THE FOLLOWING INFINITE GEOMETRIC SERIES:

a) $\sum_{k=4}^{\infty} 6\left(\frac{2}{3}\right)^{k+2} =$

b) $\sum_{k=1}^{\infty} 2(-3)^k =$



EX: GIVEN THE FOLLOWING GEOMETRIC SERIES, REWRITE AS A SIGMA NOTATION:

i) $0.5 + 1.5 + 4.5 + 13.5 + 40.5 + 121.5 + \dots + 29524.5$

ii) $\frac{4}{15} + \frac{2}{5} + \frac{3}{5} + \frac{9}{10} + \dots + \frac{531441}{20480}$



CHALLENGE: EVALUATE:

i) $\sum_{m=1}^{20} \log_3 m$


