

Worksheet G: Series and Summation

Find the indicated sum.

1. 2, 4, 6, 8, 10...

$$S_4 = \underline{\hspace{2cm}}$$

2. -1, 3, -5, 7, -9, ...

$$S_5 = \underline{\hspace{2cm}}$$

3. 4, 7, 10, 13, 16,

$$S_2 = \underline{\hspace{2cm}}$$

4. -3, 9, -27, 81, -243, ...

$$S_7 = \underline{\hspace{2cm}}$$

Evaluate each sum:

5. $\sum_{n=1}^5 2^n$

6. $\sum_{n=3}^5 4n + 3$

Evaluate each series.

7) $\sum_{n=4}^6 (100 - n^2)$

- A) 310 B) 120
C) 274 D) 329

8) $\sum_{m=1}^6 \frac{120}{m^2}$

- A) 274 B) $\frac{2178}{7}$
C) 294 D) 140

Rewrite each series using sigma notation.

9) $1 + 4 + 9 + 16 + 25 + 36$

- A) $\sum_{a=1}^4 a$ B) $\sum_{a=1}^5 a$
C) $\sum_{a=3}^9 a^2$ D) $\sum_{a=1}^6 a^2$

10) $4 + 8 + 12 + 16 + 20$

- A) $\sum_{a=1}^5 a$ B) $\sum_{a=1}^5 2a$
C) $\sum_{a=1}^5 4a$ D) $\sum_{a=1}^4 5a$

Over

Write the summation notation for the following:

11. $\frac{1}{2} + \frac{2}{3} + \frac{3}{4} + \frac{4}{5} + \frac{5}{6} + \frac{6}{7}$

12. $3 + 6 + 9 + 12 + 15$

13. $\frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \frac{1}{5^2}$

14. Explain the significance of the $(-1)^{n+1}$ in the expression $\sum_{n=1}^4 (-1)^{n+1}(4n+3)$.

15. Express the series $3 - 5 + 7 - 9$ using sigma notation.