

Exercise 2023-12 ED-00010(2) Geometric series

- (1) Calculate the first three terms of the GS with $S_{\infty} = 54$ and $T_2 = 12$.
- (2) Consider the GS: $(k + 2) + (k + 2)^2 + (k + 2)^3 + \dots$
- (a) For which value(s) of k will the series converge?
- (b) Calculate, in terms of k , the sum to infinity of the series if it is convergent.
- (3) Calculate:
- (a) $2 - 4 + 8 - 16 + \dots + 512$
- (b) $-38 - 35,5 - 33 - 30,5 - \dots - 10,5$
- (c) $\frac{2}{3} + \frac{2}{9} + \frac{2}{27} + \dots$ to seven term
- (d) $\sum_{n=5}^{12} \left(\frac{1}{2} \times 3^n \right)$
- (4) The third term of a GS is 3 and the seventh term is $15 \frac{3}{16}$. Calculate:
- (a) the constant ratio of the sequence.
- (b) the first term of the sequence.
- (c) which term is equal to $76 \frac{227}{256}$.
- (5) Calculate n if $3 + 12 + 48 + 192 + \dots +$ to n terms $= 1\,048\,575$
- (6) Consider the series: $384 + 192 + 96 + 48 + \dots$
- (a) Write the series in sigma notation.
- (b) Determine S_{∞} , if possible.
- (c) Calculate T_{12} .
- (d) Determine how many terms will have a sum of 762.