

## Worksheet 2023-12 ED-00010(2) Geometric series

- (1) Calculate the first three terms of the GS with  $S_{\infty} = 54$  and  $T_2 = 12$ .

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

- (2) Consider the GS:  $(k + 2) + (k + 2)^2 + (k + 2)^3 + \dots$
- (a) For which value(s) of  $k$  will the series converge?

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- (b) Calculate, in terms of  $k$ , the sum to infinity of the series if it is convergent.

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(3) Calculate:

(a)  $2 - 4 + 8 - 16 + \dots + 512$

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(b)  $-38 - 35,5 - 33 - 30,5 - \dots - 10,5$

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(c)  $\frac{2}{3} + \frac{2}{9} + \frac{2}{27} + \dots$  to seven term

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(d)  $\sum_{n=5}^{12} \left( \frac{1}{2} \times 3^n \right)$

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(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.

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(b) the first term of the sequence.

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(c) which term is equal to  $76\frac{227}{256}$ .

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(5) Calculate  $n$  if  $3 + 12 + 48 + 192 + \dots +$  to  $n$  terms  $= 1\,048\,575$

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(6) Consider the series:  $384 + 192 + 96 + 48 + \dots$

(a) Write the series in sigma notation.

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(b) Determine  $S_{\infty}$ , if possible.

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(c) Calculate  $T_{12}$ .

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(d) Determine how many terms will have a sum of 762.

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