

Chapter 1 Practice Review Questions

Geometric Sequences & Series

1. Determine the common ratio of the geometric sequence 8, 12, 18, 27, . . .
2. The general term of a geometric sequence is $t_n = 8(-3)^{n-1}$. Determine the common ratio.
3. Calculate the 12th term of the geometric sequence: 5, 15, 45, . . .
4. Which term of the geometric sequence 5, 15, 45, . . . is 885 735?

5. Determine the number of terms in the geometric sequence:

$$\frac{1}{128}, \frac{1}{32}, \frac{1}{8}, \dots, 2048$$

6. The second term of a geometric series is -16 and the seventh term is 512. Determine the first term.

7. The 3rd term of a geometric sequence is 48 and the 6th term is $\frac{81}{4}$. Find the 1st term of the sequence.

8. A geometric sequence of positive terms has $t_1 = 320$ and $t_7 = 78\ 125$. Find t_4 .

9. For a geometric sequence, $t_7 = 5x + 2$ and $t_{10} = x - 23$. If the common ratio, r , is 2, find the value of t_{10} .

10. If $x, 4, 8x$ are three consecutive terms in a geometric sequence, determine the values of x .

11. If the sum of the first 5 terms of a geometric series is -328 and the common ratio is -4, determine the first term.

12. Determine the sum of the first 10 terms of the geometric sequence -4, 6, -9, . . . , to the nearest tenth.

13. A doctor prescribes medication to be taken for 7 days. The amount taken on the first day is 310 mg. On each successive day, the amount taken is one half the amount taken on the previous day. What is the total amount of medication taken? (Accurate to the nearest mg.)

14. Jim worked for a company for 8 years. His starting annual salary was \$32 000. Each year his salary increased by 2% over the previous year's salary. What is the total amount of money Jim earned with this company?

15. An aquarium originally containing 30 liters of water loses 6% of its water to evaporation every day. Determine a geometric sequence which shows the number of liters of water in the aquarium on 5 consecutive days.

16. A ball is dropped from a height of 5 m. After each bounce, it rises to 60% of its previous height. What is the total vertical distance the ball travels before it comes to rest?

17. Determine the sum of the infinite geometric series: $3 - 1 + \frac{1}{3} - \frac{1}{9} + \dots$

18. For what values of x will the following infinite geometric series have a finite sum?

$$(x + 1) + (x + 1)^2 + (x + 1)^3 + \dots$$

19. For what values of x will the following infinite geometric series have a finite sum?

$$(x - 4) + (x - 4)^2 + (x - 4)^3 + \dots$$

20. Determine the sum of geometric series: $2 - 1 + \frac{1}{2} - \frac{1}{4} + \dots$

21. If the sum of an infinite geometric series is 90 and the common ratio is $-\frac{1}{5}$, determine the value of the first term.

22. Evaluate the following:

$$\sum_{k=2}^6 4(3)^k$$

23. Evaluate the following:

$$\sum_{k=1}^{\infty} 50 \left(\frac{1}{4} \right)^k$$

24. Write an expression to represent the sum of the series given by

$$\sum_{k=0}^{15} 16(2)^{k+1}$$