

Chapter 10 Test Review Sheet

Determine the next two terms in the sequence and write an explicit formula for a_n .

1) $\frac{3}{8}, \frac{4}{27}, \frac{5}{64}, \dots$

3) 4, 10, 28, 82, ...

2) 4, 12, 36, 108, ...

4) 12, 6, 0, -6, -12, ...

5) In an arithmetic sequence, $a_4 = 43$ and $a_8 = 87$. Determine a_{18} .

6) In a geometric sequence, $a_4 = \frac{5}{4}$ and $a_7 = \frac{5}{32}$. Determine a_{11} .

7) Determine the 20th term of: 2, 6, 18, 54, ...

8) Determine the 25th term of: -7, -4, -1, 2, ...

9) Determine the number of terms in the sequence: 7, 10, 13, ..., 91

10) Determine 4 arithmetic means between 3 and 88.

11) Determine 3 geometric means between 256 and 81.

- 12) Write the first four terms of the sequence: $a_1 = 3$
 $a_n = (-1)^n 5a_{n-1}$
- 13) List the first 5 terms of the sequence defined by: $a_1 = 5, a_2 = 9$, and $a_n = a_{n-1} + 2a_{n-2}$.
- 14) Write a recursive definition for 3, 8, 18, 33, 53, ...
- 15) Write a recursive definition for the sequence: 9, -18, 36, -72, ...
- 16) Use the series 4, 8, 16, 32, ... to determine the following:
- a) a_n
 - b) A recursive definition for S_n .
 - c) S_7
- 17) Determine the sum of all positive 4-digit integers ending in 7.
- 18) Determine the sum: $1 + 6 + 11 + 16 + \dots + 91$
- 19) Determine the sum of the first 30 terms: $200 - 100 + 50 - 25 + \dots$
- 20) Determine S_{50} for the series $a_1 = 4$ and $a_n = a_{n-1} + 3$
- 21) Determine the sum of the infinite geometric series $100 + 96 + \frac{2304}{25} + \dots$

22) Write the repeating decimal $0.279279279\dots$ as a ratio of two integers. **Show work** and put your answer in simplest form!

23) Evaluate.

a) $\sum_{k=1}^5 k!$

b) $\sum_{k=2}^6 2k - 5$

24) Expand: $(2x + 5)^5$

25) Expand: $(2z^2 - 1)^6$

26) Determine the coefficient of the eighth term in the expansion of $(2y + 3)^{13}$

27) Use the series $1 + \frac{2x}{3} + \frac{4x^2}{9} + \dots$ to determine:

a) the interval of convergence.

b) the sum.