

Unit 9 Study Guide WS

1. Write out all sequence and series formulas.
2. Form a sequence that has 3 arithmetic means between  $\frac{1}{2}$  and  $\frac{11}{6}$ .
3. Form a sequence that has two geometric means between 9 and  $\frac{1}{3}$ .
4. Expand  $(2p+1)^4$ .
5. Find the fourth term in the expansion of  $(2x-3y)^{14}$ .
6. Determine the sum of the infinite series  $5 + 1\frac{2}{3} + \frac{5}{9} + \dots$
7. If the 6<sup>th</sup> term of an arithmetic sequence is 8 and the 11<sup>th</sup> term is -2, what is the first term?
8. Find  $a_{10}$  in the sequence 1, 4, 7, 10, ...
9. Determine the sum of the first 8 terms of the geometric sequence  $4, -\frac{4}{3}, \frac{4}{9}, -\frac{4}{27}, \dots$
10. Determine the 5<sup>th</sup> term of the geometric sequence  $2, -\frac{3}{2}, \frac{9}{8}, \dots$
11. The 4<sup>th</sup> term of a geometric sequence is 0.5 and the 6<sup>th</sup> term is 0.125. Find the common ratio.
12. Determine the sum of the infinite series  $10, 3\frac{1}{3}, 1\frac{1}{9}, \dots$
13. If the 7<sup>th</sup> term of a geometric sequence is 192 and  $r = 2$ , determine the first term.
14. Determine the sum of the first ten terms of the geometric sequence 15, 30, 60, 120, ...
15. Determine the value of  $a_{17}$  for the sequence 6, 1, -4, ...
16. Evaluate  $\sum_{t=4}^{32} (4 + 3t)$ .
17. Write the first five terms of the sequence defined recursively.  
 $a_1=3, a_{k+1} = 2 ( a_k - 1 )$
18. If the 6<sup>th</sup> term of an arithmetic sequence is 9 and the 11<sup>th</sup> term is -1, what is the first term?
19. A certain ball dropped from a distance of 20 feet rebounds  $\frac{3}{4}$  of the height from which it fell. Find the total distance the ball travels when it hits the ground for the 7<sup>th</sup> time. What is the distance it travels before coming to rest?
20. The bottom step on stair case requires 80 bricks. Each successive step requires four less bricks than the prior step. How many bricks are in the staircase if there are 20 steps?