Math 2200   **Chapter 1 Review**   Name:_____

Part I: **Multiple Choice. Place the correct answer in the corresponding blank at the end of this section.**

1. What is the common difference in the arithmetic sequence $1, 7, 13, 19, \ldots$?

   (A) -6

   (B) 6

   (C) 7

   (D) 12

2. Which of the given formulas for the general term of the sequence $-25, -15, -5, \ 5, \ 15, \ldots$ is correct?

   (A) $t_n = 10n - 15$

   (B) $t_n = 10n - 35$

   (C) $t_n = -10n - 35$

   (D) $t_n = -10n - 15$

3. What is the sum of the series $(-4) + (-3) + (-2) \ldots + (3)$?

   (A) -8

   (B) -4

   (C) 0

   (D) 48

4. What is the common ratio for the geometric sequence $2, \frac{1}{2}, \frac{1}{8}, \frac{1}{32}, \ldots$?

   (A) -4

   (B) $-\frac{1}{4}$

   (C) $\frac{1}{4}$

   (D) 4

5. How many terms are in the sequence 2, 10, 50, 250, 1250, ..., 156 250 ?

    (A) 6

    (B) 7

    (C) 8

    (D) 9

6. What is the sum of the geometric series $6 + 30 + 150 + \cdots + 3750$?

    (A) 749

    (B) 938

    (C) 4686

    (D) 4688

7. In an arithmetic sequence, $t_3 = m$ and $t_4 = n$. Which expression represents t_6?

    (A) $2m - n$

    (B) $2n - m$

    (C) $3n - m$

    (D) $3n - 2m$

8. The sum of an infinite geometric series is 152 and its common ratio is $\frac{3}{4}$. What is the first term of the series?

    (A) $\dfrac{3}{4}$

    (B) 38

    (C) 114

    (D) $\dfrac{608}{3}$

9. Which of the following best describes the series $-34 - 17 - \frac{17}{2} - \frac{17}{4} - \cdots$?

    (A) The series is divergent and has no sum.

    (B) The series is convergent and has a sum of -68.

    (C) The series is convergent and has no sum.

    (D) The series is divergent and has a sum of -68.

10. What are the first three terms of the sequence given by $t_n = 4\left(\frac{1}{8}\right)^{n-1}$?

(A) $\frac{1}{2}, \frac{1}{16}, \frac{1}{128}$

(B) $4, \frac{1}{2}, \frac{1}{16}$

(C) $4, 16, 64$

(D) $4, \frac{4}{7}, \frac{4}{49}$

Answers to multiple choice.

1.___   2.___   3.___   4.___   5.___

6.___   7.___   8.___   9.___   10.___

Part II: **Constructed Response. Answer each question in the space provided. Show all workings.**

11.   Algebraically determine the number of terms in the geometric series,
$\frac{1}{81} + \frac{1}{27} + \frac{1}{9} + \cdots + 2187$, and find the sum of the series.

12. The first three terms of a geometric sequence are $x - 1$, $2x$, $3x + 9$, ... Algebraically determine the value of x.

13. The first three terms of an arithmetic sequence are $x + 4$, $5x + 1$, $7x + 4$, ... Algebraically determine the value of x and state the common difference.

14. The monthly production of crude oil, in barrels, for the first four months for a test well at Hebron is given below. In theory, what is the expected lifetime production of the well, to the nearest barrel?

Month	# of Barrels
1	40 000
2	34 000
3	28 900
4	24 565