SCORE: \_\_\_\_ / 10 POINTS

- [1] Solve the following problems on a <u>separate sheet of paper</u>.
- [2] Show your work clearly, neatly and logically. It should be clear how you arrived at your at your answers.
- [3] 1 point for each correct answer, with neat and logical work shown
  ½ point for each correct answer, with messy but correct work shown
  0 points for each incorrect answer, or answer with no work or incorrect work shown
- [1] Is the sequence -3.2, 4.8, -7.2, 10.8, -16.2,  $\cdots$  arithmetic, geometric, neither or both ?

[2] Find  $a_{23}$  for the arithmetic sequence with  $a_4 = 21$  and  $a_{10} = -3$ .

- [3] Find the sum of the infinite geometric series  $20 \frac{10}{3} + \frac{5}{9} \cdots$ .
- [4] Convert  $0.3\overline{69}$  to a fraction.
- [5] Find  $\sum_{n=1}^{\infty} \frac{3}{5(4)^{n-1}}$ .
- [6] The first graduating class of a nursing college had 38 graduates. Each graduating class since has had 9 more graduates than the previous class. How many students graduated from the college in the first 15 graduating classes ?
- [7] The Costas used 20,000 gallons of water in January 2009. If their water usage increases by 1% each month, how much water will they have used from the beginning of January 2009 until the end of December 2010 ?
- [8] The town of Angorra was incorporated in 1981, when the population was 57,000 people. Every year, the population increased by 2.1%. What was the population of Angorra 18 years after incorporation ?
- [9] Leilani deposited \$1500 into her daughter's college fund at the beginning of every year for 18 years. The account earned 5% interest compounded annually at the end of the year. How much did Leilani's daughter have for college at the end of the 18 years ?
- [10] The Math Phreeqz Club was founded during the 2004-2005 academic year with 24 members. Each year since, the membership has increased by eleven. How large will the membership be in 2032-2033 if the membership continues to increase in the same way ?