Name:_____ **TA:_____**

Math 11 Pre-Calculus LG 2 Ver B **/20**

1. Write the first 4 terms of the geometric sequence where $t_1 = 5$ and $r = -3$. *(2 marks)*

2. If the geometric sequence has $t_1 = -4$ and $r = -3$, determine t_5. *(1 mark)*

3. The number of insects in a population increases 25% each day. If there are 1500 insects now, how many days will it take before there are at least 50 000? *(2 marks)*

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4. The population of Cherryville was 1 500 in 2006. In 2015, the population was 4 200. Determine the value of the growth rate (as an annual percentage, to two decimal places) from 2006 to 2015. *(2 marks)*

5. Determine the sum of the first 12 terms of the geometric series: 30 – 15 + 7.5 + … *(2 marks)*

6. Find the sum of the following geometric series: 243 - 81 + 27 + … - $\frac{1}{9}$. *(2 marks)*

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7. A website experienced 40 unique visitors on its first day. Each day, the number of unique visitors increased by 25%. How many total unique visitors would have visited the site after 10 days? *(2 marks)*

8. Determine the sum of each infinite geometric series, if it exists. *(1 mark each)*

   a) $t_1 = 8$ and $r = \frac{1}{4}$

   b) $12 - 18 + 27 + \ldots\ldots$

9. The first term of an infinite geometric series is 12 and the sum is 60. Determine the common ratio. *(2 marks)*

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10. An oil well produces 100 000 barrels of oil per year. If production drops by 8% per year, estimate the total production before the well runs dry. *(3 marks)*

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