Algebra 2 Class Worksheet #6 Unit 9 page 1 _____

Solve each of the following problems. Show your work neatly organized.

1. Find the sum of the first 6 terms of a geometric sequence in which $a_1 = 2$ and $r = 3$.

2. Find the sum of the first 10 terms of the sequence defined by $a_n = (-3)^n$.

3. Find the sum of the first 7 terms of the sequence defined by $a_{n+1} = 0.4a_n$ where $a_1 = 125$.

4. Find the sum of the first 8 terms of the sequence 7, 14, 28, 56, ...

5. Evaluate the series $5 - 10 + 20 - 40 + ... + 1280$.

6. Evaluate the infinite series $10 + 2 + 0.4 + 0.08 + ...$

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Solve each of the following problems. Show your work neatly organized.

7. Evaluate: $\sum_{i=1}^{10} (-3)(-2)^{i-1}$

8. Evaluate: $\sum_{i=1}^{\infty} \left(\frac{1}{2}\right)\left(\frac{2}{3}\right)^{i-1}$

9. A job has a starting salary of $38,000 with a guaranteed increase of 3% per year. Find the total salary for the first ten years.

10. A ball is dropped from a height of 108 inches onto a concrete floor. On each bounce the ball rebounds to 75% of its previous height. What is the **total vertical distance** that the ball has traveled when it hits the floor for the eighth time? (Round your answer to the nearest tenth of an inch.)

11. A ball is dropped from a height of 108 inches onto a concrete floor. On each bounce the ball rebounds to 75% of its previous height. What is the **total vertical distance** that the ball will travel before it comes to rest? (Round your answer to the nearest tenth of an inch.)