

**Algebra 2 Worksheet #8 Unit 9 page 1** \_\_\_\_\_

1. Find the sum of the first 50 terms of an arithmetic sequence in which  $a_1 = 5$  and  $d = 3$ .

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2. Find the sum of the first 10 terms of a geometric sequence in which  $a_1 = 5$  and  $r = 3$ .

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3. Find the sum of the first 50 terms of the sequence defined by  $a_n = 4n - 1$ .

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4. Find the sum of the first 10 terms of the sequence defined by  $a_n = 3(2)^{n-1}$ .

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5. Find the sum of the first 10 terms of the sequence defined by  $a_{n+1} = -2a_n$  where  $a_1 = -1$ .

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6. Find the sum of the first 30 terms of the sequence defined by  $a_{n+1} = a_n + 6$  where  $a_1 = 4$ .

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7. Find the sum of the first 30 terms of the sequence 4, 8, 12, 16, ...

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8. Find the sum of the first 10 terms of the sequence 4, 8, 16, 32, ...

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9. Evaluate the series  $5 + 8 + 11 + 14 + \dots + 701$ .

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10. Evaluate the series  $5 + 10 + 20 + 40 + \dots + 2560$ .

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11. Evaluate the series  $4 + 1 + \frac{1}{4} + \frac{1}{16} + \dots$

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Evaluate each of the following.

12.  $\sum_{k=1}^5 k^2$

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13.  $\sum_{j=1}^{40} (-1)^j \binom{j}{40}$

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14.  $\sum_{i=1}^{12} (3)(2)^{i-1}$

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

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16.  $\sum_{i=1}^{60} (6i + 1)$

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## Algebra 2 Worksheet #8 Unit 9 page 4

Solve each of the following.

17. A job has a starting salary of \$39,000 with a guaranteed increase of \$750 per year. Find the total salary for the first 12 years.

18. A job has a starting salary of \$39,000 with a guaranteed increase of 2% per year. Find the total salary for the first 12 years.

19. A ball is dropped from a height of 200 inches onto a concrete floor. On each bounce the ball rebounds to 80% of its previous height. What is the total vertical distance that the ball has traveled when it hits the floor for the sixteenth time?

20. A ball is dropped from a height of 200 inches onto a concrete floor. On each bounce the ball rebounds to 80% of its previous height. What is the total vertical distance that the ball will travel before it comes to rest?