

**Algebra II Worksheet #4 Unit 9 page 1**

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Give the first five terms of each sequence defined below.

1. The arithmetic sequence with  $a_1 = 7$  and  $d = 4$ .

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2. The geometric sequence with  $a_1 = 5$  and  $r = 2$ .

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3. The arithmetic sequence with  $a_9 = 35$  and  $a_{15} = 59$ .

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4. The geometric sequence with  $a_5 = 80$  and  $a_8 = 640$ .

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5. The sequence defined by  $a_n = 6n - 2$ .

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6. The sequence defined by  $a_n = n^3 - n^2$ .

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7. The sequence defined by  $a_n = 5(-2)^{n-1}$ .

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8. The sequence defined by  $a_{n+1} = a_n + 2.5$  ;  $a_1 = 4$ .

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9. The sequence defined by  $a_{n+1} = 1.5a_n$  ;  $a_1 = 16$ .

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10. The sequence defined by  $a_{n+1} = -2a_n + 5$  ;  $a_1 = 3$ .

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Find each of the following.

11. 5 arithmetic means between 3 and 18.

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12. 2 geometric means between 8 and 125.

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## Algebra II Worksheet #4 Unit 9 page 2

Solve each of the following problems.

13. A certain job has a starting salary of \$38,000 with a guaranteed increase of \$2,500 per year. What will be the salary for the 12<sup>th</sup> year?

14. A certain job has a starting salary of \$38,000 with a guaranteed increase of 6% per year. What will be the salary for the 12<sup>th</sup> year?

15. A ball is dropped onto a concrete floor from a height of 50 inches. On each bounce the ball rebounds to 80% of its previous height. How high will the ball bounce after it has hit the floor for the 9<sup>th</sup> time?

16. An object accelerates in such a way that it travels 8 feet during the first second, 24 feet during the next second, 40 feet during the third second, and 56 feet during the fourth second. If this pattern continues, how far will it travel during the twentieth second?

For each of the following sequences

- determine whether the sequence is arithmetic, geometric, or neither; and
- write an explicit formula for the sequence;

17. 0.7, 0.07, 0.007, 0.0007, ...

a. \_\_\_\_\_ b. \_\_\_\_\_

18. 2, 2.2, 2.4, 2.6, ...

a. \_\_\_\_\_ b. \_\_\_\_\_

19. -3, 6, -12, 24, -48, ...

a. \_\_\_\_\_ b. \_\_\_\_\_

20. 0, 2, 6, 12, 20, 30, ...

a. \_\_\_\_\_ b. \_\_\_\_\_