General Algebra 2   Worksheet #4   Unit 10   Selected Solutions

Give the first five terms of each sequence defined below.

4.   The sequence defined by $a_n = n^3 - n^2$.   **0, 4, 18, 48, 100**

7.   The sequence defined by $a_1 = 16$; $a_{n+1} = 1.5a_n$.   **16, 24, 36, 54, 81**

Use an appropriate formula to solve each of the following problems.

11.   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 9th time?

> **Height after bounce 1 = a_1 = 40 inches (80% of 50)   Geometric Sequence**
> **Height after bounce 2 = a_2 = 32 inches (80% of 40) a_1 =40**
> **Height after bounce 3 = a_3 = 25.6 inches (80% 0f 32)   r = .8**
> **Height after bounce 9 = a_9 = ? $a_9 = a_1 r^8$**
> $$a_9 = 40(.8)^8$$
> **$a_9 \approx 6.71$ inches**
> **It will bouncs about 6.71 inches high.**

12.   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?

> **a_1 = 8 feet   Arithmetic Sequence $a_{20} = a_1 + 19d$**
> **a_2 = 24 feet $a_1 = 8$ $a_{20} = 8 + (19)(16)$**
> **a_3 = 40 feet   d = 16 a_{20} = 312**
> **a_4 = 56 feet   It will travel 312 feet.**