A# _____

Recursive Worksheet

Determine the 3rd, 4th, and 5th terms of the sequence described by the recursive definition.

1) $a_1 = 9; a_n = \frac{1}{3} a_{n-1}$

2) $a_1 = 4; a_n = (a_{n-1})^2 - 10$

3) $a_1 = \frac{1}{2}; a_n = \frac{n}{n+1}(a_{n-1} + 1)$

4) $a_1 = 2; a_2 = 4; a_n = a_{n-1} \bullet a_{n-2}$

5) $a_1 = 7; a_2 = 3; a_n = a_{n-1} - 2a_{n-2}$

Give a recursive definition for the sequence.

6) $81, 27, 9, 3, \ldots$

7) $1, 3, 7, 13, 21, 31, \ldots$

8) $1, 2, 6, 24, 120, 720, \ldots$

9) a) Give the first eight terms of the sequence defined recursively by $a_1 = 4, a_2 = 8; a_n = \frac{a_{n-1}}{a_{n-2}}$.

b) Observing the pattern you get in part (a), tell what the 100th term of the sequence will be.

10) The sum of the first n terms of a series is $S_n = n^2 + 4n$. Find a_1, a_2, a_3.

Hint: You're looking for <u>terms</u>.
The formula gives you S_1, S_2, S_3.

11) The sum of the first n terms of a series is $S_n = 2n^2$.

a. Find a_1, a_2, a_3.

b. Write a rule for $S_n - S_{n-1}$.

12) Determine the sum of all positive 3-digit numbers divisible by 6.

13) Determine the sum of all positive odd numbers less than 400 that are divisible by 5.