Name _____ Date _____

Mr. Schlansky Algebra II

Evaluating Recursive Sequences

1. Find the first 4 terms of the sequence $a_n = a_{n-1} + 4$ where a $a_1 = -1$.

2. Find the first 4 terms of the sequence $a_n = 4a_{n-1}$ where a $a_1 = 12$.

3. Find the first 4 terms of the recursive sequence $\begin{aligned} a_1 &= -3 \\ a_n &= 4 - 3a_{n-1} \end{aligned}$

4. If $a_n = 3a_{n-1} - 4$ and $a_1 = 9$, find a_5

5. Find the 8^{th} term for the sequence where $a_n = 5a_{n-1} + 2n$ where $a_5 = 3$

6. Find the first four terms of the recursive sequence defined below.

$a_1 = -3$

$a_n = a_{(n-1)} - n$

7. A sequence is defined recursively by $f(1) = 16$ and $f(n) = f(n-1) + 2n$. Find $f(4)$.

(1) 32 (2) 30 (3) 28 (4) 34

8. Find the third term in the recursive sequence $a_{k+1} = 2a_k - 1$, where $a_1 = 3$.

9. Which recursively defined function represents the sequence $3, 7, 15, 31, \ldots$?

1) $f(1) = 3,\ f(n+1) = 2^{f(n)} + 3$
2) $f(1) = 3,\ f(n+1) = 2^{f(n)} - 1$
3) $f(1) = 3,\ f(n+1) = 2f(n) + 1$
4) $f(1) = 3,\ f(n+1) = 3f(n) - 2$

10. What is the fourth term of the sequence defined by $a_1 = 3xy^5$

$$a_n = \left(\frac{2x}{y}\right) a_{n-1}?$$

1) $12x^3y^3$
2) $24x^2y^4$
3) $24x^4y^2$
4) $48x^5y$