CALCULUS II
DR. PAUL L. BAILEY

Activity 0405
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Name:

In the sequence $1, 2, 3, ...$, the next term is 4, and the n^{th} term is n.
In the sequence $2, 4, 6, ...$, the next term is 8, and the n^{th} term is $2n$.
In the sequence $3, 5, 7, ...$, the next term is 9, and the n^{th} term is $2n + 1$.

Problem 1. In each sequence below, write the next term and the n^{th} term.

	Sequence	Next Term	7^{th} Term	n^{th} Term
(a)	1, 4, 9, 16, ...			
(b)	2, 5, 10, 17, ...			
(c)	1, -1, 1, -1, ...			
(d)	$1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, ...$			
(e)	$1, -\frac{1}{2}, \frac{1}{3}, -\frac{1}{4}, ...$			
(f)	$1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, ...$			
(g)	$1, \frac{1}{2}, \frac{1}{4}, \frac{1}{16}, ...$			
(h)	$1, \frac{1}{2}, \frac{3}{4}, \frac{7}{8}, ...$			
(i)	1, 1, 2, 3, 5, 8, 13, ...			
(j)	2, 3, 5, 7, 11, 13, ...			

If we have a sequence, the first term is often written a_1, the second is a_2, the seventh is a_7, and the n^{th} is a_n. If we have two or three sequences, we write their terms in the form a_n, b_n, and c_n, and so forth.

Problem 2. What is a_7, if $a_n = 3n - 4$?

Problem 3. What is b_7, if $a_n = 3n - 4$ and $b_n = a_n^2 + 3$?

Problem 4. What is c_7, if $c_0 = 1$ and $c_n = 3c_{n-1}$?

Problem 5. What is s_7, if $s_0 = 0$ and $s_n = s_{n-1} + n$

Problem 6. What is s_n, if $s_0 = 0$ and $s_n = s_{n-1} + n$?

Problem 7. What would be the best mathematical definition of "a sequence of real numbers"?