

Name: _____
Pre-Calculus

Date: 5/11/15
Ms. Wilson

Limits of Sequences
Due Tuesday 5/12/15

For questions 1 – 4 , find the first 6 terms and the 100th term of the explicitly-defined sequence.

1.) $u_n = \frac{n+1}{n}$

2.) $v_n = \frac{4}{n+2}$

3.) $c_n = n^3 - n$

4.) $d_n = n^2 - 5n$

For questions 5 – 6 , find the first 4 terms and the eighth term of the recursively-defined sequence.

5.) $a_1 = 8$ and $a_n = a_{n-1} - 4$ for $n \geq 2$

6.) $b_1 = 2$ and $b_{k+1} = 3b_k$ for $k \geq 1$

For questions 7 – 16, determine if each sequence converges or diverges. If it converges, give the limit.

7.) 1, 4, 9, 16,, n^2 ,

8.) $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16}, \dots, \frac{1}{2^n}, \dots$

9.) $\frac{1}{1}, \frac{1}{4}, \frac{1}{9}, \frac{1}{16}, \dots$

10.) $\{3n - 1\}$

11.) $\left\{ \frac{3n-1}{2-3n} \right\}$

12.) $\left\{ \frac{2n-1}{n+1} \right\}$

13.) $\{(0.5)^n\}$

14.) $\{(1.5)^n\}$

15.) $a_1 = 1$ and $a_{n+1} = a_n + 3$ for $n \geq 1$

16.) $a_1 = 1$ and $a_{n+1} = \frac{a_n}{3}$ for $n \geq 1$