Math 1B

Sequences

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1. List the first five terms $(n = 1, 2, 3, \dots)$

(a) $a_n = \dfrac{2^n}{2n+1}$

(b) $a_1 = 1$, $a_{n+1} = \dfrac{a_n}{1+a_n}$

2. Do these sequences converge or diverge? If converge, what to?

(a) $a_n = \dfrac{3n^2 - n + 6}{n^2 + 4n + 1}$

(b) $b_n = \dfrac{3}{\sqrt{n^2+4n} - n}$

(c) $c_n = \dfrac{n!}{2^n}$

(d) $d_n = \dfrac{\sin(n)}{n}$

(e) $e_n = \sin(n)$

(f) $f_n = \sin(\pi n)$

3. For what values of p is the sequence $a_n = n^p$ convergent?

4. Let $a_n = \frac{1}{1} + \frac{1}{2} + \frac{1}{4} + \cdots + \frac{1}{2^n} = \sum_{k=0}^{n} \frac{1}{2^k}$.

Does a_n converge (& what to?) or diverge?