

AUC apCalculus BC

Assignment 04

PROBLEM 2.3. Prove that the following properties are true eventually on $n \in \mathbb{N}$ for any given $\epsilon > 0$:

- (1) $-n^{7.3} + n^{4.2} < -\epsilon$.
- (2) $\sqrt{2}n^6 - \sin(n^n)n^2 > \epsilon$.
- (3) $\left| \frac{\cos(\cos(n))}{n^8 - 3n^2 + 1} - \frac{\sin(\sin(n))}{n^3 - 2n + 1} \right| < \epsilon$.

PROBLEM 9.3. Write the proofs of the following table of Theorems.

$\lim_{n \rightarrow \infty} a_n +$	$\beta \in \mathbb{R}$	$+\infty$	$-\infty$
$\alpha \in \mathbb{R}$	$\alpha + \beta$	$+\infty$	$-\infty$
$+\infty$	$+\infty$	$+\infty$	undet.
$-\infty$	$-\infty$	undet	$-\infty$

FIGURE 2. Limits of the sum of two sequences