Precalculus

12-04 Limits at Infinity and Limits of Sequences

Limits at Infinity

$$\lim_{x\to\infty}\frac{1}{x^r}=0$$

$$\lim_{x\to-\infty}\frac{1}{x^r}=0$$

Evaluate $\lim_{x\to\infty}\frac{1+5x-3x^3}{x^3}$

Shortcut

- N = degree of _____
- D = degree of _____
- N < D → _____
- N = D → _____
- N > D → _____

Evaluate

$\lim_{x\to\infty}\frac{-x+4}{5x^2+2}$

$\lim_{x\to\infty}\frac{-x^2+4}{5x^2+2}$

Limits of Sequences

- If terms of a sequence approach a _____ as $n\to\infty$, then it _____.
- Otherwise, it _____.

Find the limit of the sequence $a_n=\frac{(n-3)(4n-1)}{4-3n-n^2}$

Find the limit of $a_n=\frac{5}{n^3}\cdot\left[\frac{n(n+1)(2n+1)}{6}\right]$.