MATH 273 (010) CALCULUS III WORKSHEET II NAME:_____
(PLEASE PRINT LEGIBLY)

1 – 12 Find the limit for each if it exists. If it does not exist explain why it does not exist.

1. Consider the sequence $f : \mathbb{N} \longrightarrow \mathbb{R}$ ∋ $f(n) = \dfrac{(-1)^n}{n^2}$. Find $\lim\limits_{n \longrightarrow \infty} \left(f(n)\right)$

2. Consider the sequence $f : \mathbb{N} \longrightarrow \mathbb{R}$ ∋ $f(n) = \dfrac{n^2 + n - 2}{n^3 - n^2 - 9n + 9}$. Find $\lim\limits_{n \longrightarrow \infty} \left(f(n)\right)$

3. Consider the sequence $f : \mathbb{N} \longrightarrow \mathbb{R}$ ∋ $f(n) = \dfrac{n^3 - n^2 - 9n + 9}{4n^3 + 2n}$. Find $\lim\limits_{n \longrightarrow \infty} \left(f(n)\right)$

4. Consider the sequence $f : \mathbb{N} \longrightarrow \mathbb{R}$ ∋ $f(n) = \dfrac{1}{n^2 + n - 2}$. Find $\lim\limits_{n \longrightarrow \infty} \left(f(n)\right)$

5. Consider the sequence $f : \mathbb{N} \longrightarrow \mathbb{R}$ ∋ $f(n) = \dfrac{n^3 - n^2 - 9n + 9}{n^2 + n - 2}$. Find $\lim\limits_{n \longrightarrow \infty} \left(f(n)\right)$

6. Consider the sequence $S = \left\{\dfrac{\cos(\pi \cdot n)}{n+3}\right\}_{n=1}^{\infty}$. Find $\lim\limits_{n \longrightarrow \infty} \left(S\right)$

7. Consider the sequence $S = \left\{\dfrac{1 - \cos(\pi \cdot n)}{2 + \cos(\pi \cdot (n+1))}\right\}_{n=1}^{\infty}$. Find $\lim\limits_{n \longrightarrow \infty} \left(S\right)$

8. Consider the sequence $\left\{\dfrac{\ln(n)}{e^n}\right\}_{n=1}^{\infty}$. Find $\lim\limits_{n \longrightarrow \infty} \left(\left\{\dfrac{\ln(n)}{e^n}\right\}_{n=1}^{\infty}\right)$

9. Consider the sequence $\left\{\dfrac{\sqrt{n}}{\ln(n)}\right\}_{n=1}^{\infty}$. Find $\lim\limits_{n \longrightarrow \infty} \left(\dfrac{\sqrt{n}}{\ln(n)}\right)$

10. Consider the sequence $\left\{\dfrac{\ln(n)}{\sqrt{n}}\right\}_{n=1}^{\infty}$. Find $\lim\limits_{n \longrightarrow \infty} \left(\dfrac{\ln(n)}{\sqrt{n}}\right)$

11. Consider the sequence $f : \mathbb{N} \longrightarrow \mathbb{R}$ ∋ $f(n) = \dfrac{5n^2 - n + 9}{7n^2 + 2n - 6}$. Find $\lim\limits_{n \longrightarrow \infty} \left(f(n)\right)$

12. Consider the sequence $f : \mathbb{N} \longrightarrow \mathbb{R}$ ∋ $f(n) = \dfrac{7n^2 + 2n - 6}{5n^2 - n + 9}$. Find $\lim\limits_{n \longrightarrow \infty} \left(f(n)\right)$