1 Define/ State: 1

- $\lim_{n \to \infty} x_n = L$

- $\lim_{x \to} f(x) = L$

- $f: A \to \mathbb{R}$ is cts at $c \in A$

- $f: A \to \mathbb{R}$ is uniformly cts on A

- $f, f_n : A \to \mathbb{R}$, $f_n \to f$ pointwise on A

- $f, f_n: A \to \mathbb{R}$, $f_n \rightrightarrows f$ on A

- (f_n) is uniformly Cauchy on A

- (x_n) is Cauchy
- $\sum_{n=1}^{\infty} x_n = L$
- Cauchy criterion for $\sum_n x_n$
- Principle of Mathematical Induction
- Cantor's Theorem
- Bolzano - Weierstrass Theorem
- Monotone functions
- $f'(c)$
- Chain Rule

- Completeness Property of $\mathbb{R}$
- sup, inf
- Bounded set, sequence, function

☆ You will be asked to give a full proof of the Nested Intervals Theorem.

- Show $\lim_{x \to 4} \sqrt{x} - 1 = 1$

- Show $\lim_{n \to \infty} \frac{1}{\sqrt{n} - 1} = 0$

- Show that if $f_n(x) = \frac{x^2+3}{\sqrt{n}}$ on $[-1,1]$ then $f_n \rightrightarrows 0$.

- Show that if A is bounded above and B is bounded below then

$$A - B = \{ x - y \mid x \in A, y \in B \}$$

is bounded above

- Does $x_1 = 1$

$$x_{n+1} = \sqrt{x_n + 4}$$

converge?