1. **Sequence of Functions**
   1. **Definition**: Let and is a sequence in , we get on numerical sequence converges to all points of , let defined as or , so .
   2. **Definition**: Let in . We said that is
2. A converge pointwise to , if , and written as .
3. An uniformly converge to , if , and written as if .
4. A pointwise Cauchy sequence, if .
5. An uniformly Cauchy sequence, if .
   1. **Example**: Let a function defined as , then defined as .

**Solution: ,** if (by Archimedes property)

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* 1. **Example**: Let a function defined as , then defined as .

**Solution:** Takeand  **,** .

* 1. **Example**: Let a function defined as , then defined as .

**Solution:**  **,** let

If , if .

* 1. **Example**: A sequence is a converge pointwise and does not uniformly converge on .

**Solution:**

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* 1. **Example**: Let a function defined as and let a function defined as , then , but does not uniformly converge to .
  2. **Notes**: Let is a sequence and is a function of real value defined on . Then we have

1. If every function of is bounded on , then a function not necessary be a real value defined on .
2. If every function of is continuous on , then a function not necessary be a real value defined on .
   1. **Theorem:** Let is a sequence of real value defined on and is a function of real value defined on . Then we have
3. If every function of is a bounded on , then is a bounded.
4. If every function of is a continuous on , then is a continuous.

**Proof:** (1) since .

Since every function of is a bounded on .

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is a bounded.

* 1. Let is a compact metric space and (1) (2) or , then .
  2. **Theorem:** If a function is a continuous, then there is a sequence of polynomials is uniformly converges to .