**11. Some Important Metric Spaces**

(11.1) **Lemma**: If , then and .

(11.2) **Theorem**: (Holders Inequality)

If .

(11.3) **Corollary**: (**Cauchy-schwars Inequality**)

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(11.4) **Theorem**: (**Minkokowsks Inequality**)

If .

(11.5) **Example**: Let represents a set of all bounded real functions and continuous on . Define by , then be incomplete metric space.

(11.6) **Example**: Let represents a set of all bounded real functions and continuous on . Define by sup then be complete metric space.

(11.7) **Example**: Let , represents a set of real functions , this means . Define by , then be complete metric.

(11.8) **Example**: Let , represents a set of real sequences , this means . Define by , then be complete metric.

**Solution:** the axioms are clear.

(4) let

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(11.9) **Example**: Let , represents a set of bounded real sequences . Define by sup , then be complete metric.