**Indeterminate forms:**If then it is called an indeterminate form at . The forms , , , ,  and  are also indeterminate forms.

**Theorem: State and prove L’ Hospital’s Rule.**

**Statement:**If two functions and are continuous at  , also their derivatives , are continuous at this point and  but then L’ Hospital’s rule states as,



In case,, the rule maybe extended.

**Proof:**We have 

Expanding by Taylor’s Theorem we get



where and .

Since so from (1) we have







**(Proved).**

**Evaluate the following limits:**

**Problem 01: Find****Problem 02: Find**

**Sol:** Given that, **Sol:** Given that,



**Problem 03: Find** **Problem 04: Find**

**Sol:** Given that, **Sol:**Given that,



**Problem 05: Find** **Problem 05: Find**

**Sol:** Given that, **Sol:** Given that,



**Problem 06: Find** **Problem 07: Find**

**Sol:**Given that, **Sol:**Given that,



**Problem 08: Find** **Problem 09: Find**

**Sol:** Given that, **Sol:** Given that,



**Homework:**

**Problem 01: Find**Ans: 1

**Problem 02: Find**Ans: 

**Problem 03: Find**Ans: 

**Problem 04: Find**Ans: 

**Problem 05: Find**Ans: 

**Problem 06: Find**Ans: 1