**EXAMPLE 6:** For what values of if the function continuous?

Sol:









 is continuous for all values of except , 

**EXAMPLE 7:** Discuss the Continuity of

 

Sol:

1. 
2.  

Case (1)

1. 



1. 



 discontinuous

1. 
2.  

Case (2)

1. 
2. 



The function is continuous 

1. 
2.  

Case (3)

1. 
2. 





is discontinuous at 

**EXAMPLE 8:** Determine all values of the constant  so that the following function is continuous for all values of  

Sol:

 is continuous for  at any value of  alsois continuous for  that mean must be defined at 

1. 

2) 













***H.W* Ex 9:** for what values of  is the following function continuous ?

 

***H.W* Ex 10:** Let 

Determine and  so that the function is continuous everywhere.

Sol:

 

 must be 













must be 







***H.W* Ex 11:** Determine if the following function is continuous at



***H.W* Ex 12:** Determine if the continuous at

**H.W Ex 13:** Suppose that and 

Find: a) all zeros of 

 b) the value of that  continuous at

**limit of trigonometric function**

1.  
2.  
3.  
4. 
5. 
6. 
7. 

**EXAMPLE 1:** Prove 

Sol: 

**EXAMPLE 2:** Prove 

Sol: 

**EXAMPLE 3:** Prove 

Sol: 

**EXAMPLE 4:** Prove 

Sol: the Taylor series for 





 so we can neglected 





**EXAMPLE 5:** Prove 

Sol: the Taylor series for 















**EXAMPLE 6:** Find the limit the following function 

1)  2)  3)  4)  5) 

6)  7)  8)  9) 

10) 

1) Sol:

 





3) Sol:







5) Sol:









6) Sol:













7) Sol:









9) Sol:



