**Chapter 5 TEST  
NO Calculator**

**Free Response Questions**

1. Let’s consider the area below , above , from to .  
   a) Determine an approximation of this area using LRAM with 3 subintervals. [1]  
     
     
     
     
     
     
     
   b) Determine the exact value of this area using a geometric interpretation. [1]
2. Let’s consider the area below , above , from to .  
   a) Determine an approximation of this area using MRAM with 3 subintervals. (Sketch the area) [2]  
     
     
     
     
     
     
     
     
     
     
     
   b) Determine the exact value of this area using antiderivatives. [1]
3. Interpret the given limit as a definite integral: [1.5]
4. Rewrite the following integral as the limit of a Riemann Sum: [1.5]
5. Evaluate the following integrals: [9]  
     
   a)   
     
     
     
     
   b)   
     
     
     
     
   c)   
     
     
     
     
   d)   
     
     
     
     
   e)   
     
     
     
     
   f)

**Multiple choices [2]**

1. Let be the greatest integer function ( is the smallest number less than or equal to ).

What is ?  
  
A) 3 B) 4 C) 5 D) 6 E) DNE (*f* is not continuous)

1. What is ?  
     
   A) 0 B) 1 C) D) E)

**Free Response Questions**

1. Given that and , evaluate the following integrals in terms of *a* and *b*.   
    [2]  
   a)   
     
   b)
2. Find the average value of over [2]
3. Find the indicated derivatives: [3]  
     
   a)   
     
     
     
   b)   
     
     
     
   c)
4. Evaluate the following indefinite integrals: [2]  
     
   a)   
     
     
     
     
   b)
5. Evaluate the following limit: [2]

1. Let , where is represented below. [6]A graph of a line

   Description automatically generated  
     
   a) Evaluate   
     
     
     
     
   b) Evaluate   
     
     
     
     
   c) On which interval(s) is negative? No explanation required.   
     
     
     
   d) On which interval(s) is negative? No explanation required.  
     
     
     
   e) On which interval(s) is decreasing? Justify  
     
     
     
     
   f) On which interval(s) is concave down? Justify