

MATH 1080, SPRING 2006, HW SET 8

You need to show all your work and explain with following the guideline described in the class webpage to get the full credit. And please staple your HW papers.

HW 7 Due on Thursday 03/30/06

Before doing this HW, go over the definitions with examples given in class.

\mathbf{LS}_n means the left-hand Riemann sum with n -subdivisions and \mathbf{RS}_n means the right-hand Riemann sum with n -subdivisions.

Let $f(x) = x^2 + 3x + 2$ be a function on the domain $[2, 4]$. We will find the area under the graph of this function on $[2, 4]$ by proceeding the following steps :

- (1) Find \mathbf{LS}_3 .
- (2) Find \mathbf{RS}_3 .
- (3) Find an approximation of the area under the graph of f on $[2, 4]$ with 3-subdivisions by using (1) and (2).
- (4) Find \mathbf{LS}_5 .
- (5) Find \mathbf{RS}_5 .
- (6) Find an approximation of the area under the graph of f on $[2, 4]$ with 5-subdivisions by using (4) and (5).
- (7) Find \mathbf{LS}_n in terms of n for arbitrary n .
- (8) Find \mathbf{RS}_n in terms of n for arbitrary n .
- (9) Find the precise area under the graph of f on $[2, 4]$ by taking the limit of (6) or (7) as n goes to infinity.
- (10) Compare (3) and (6). Considering the precise area obtained in (9), which is a better approximation of the precise area between (3) and (6)?