

**Math 2253 Homework** Due in class Tuesday, November 3

For complete credit, your work should be clean, legible, and complete. Show all work.

It is OK (and a good thing) to discuss the problems with others, but the work that you hand in must be your own. Any academic dishonesty will be punished with extreme prejudice.

1. Use any method and 5 rectangles to estimate the area between one arch of the graph of  $\sin x$  and the x-axis, i.e. from  $x = 0$  to  $x = \pi$ . Write your final answer in decimal form.

2. For the function  $f(x) = x^2 + 3x$ :

- a) Use 4 rectangles and any method to estimate the area between the graph and the x-axis on  $[2,4]$ .
- b) Now get an expression in sigma notation for the same area, using  $n$  rectangles, where  $n$  is unspecified.
- c) Use either your calculator or the identities on pp. 337-338 to evaluate your answer for part b).
- d) Take the limit as  $n$  goes to infinity of your answer in part c) to get the exact value of the area.