Homework 4 - Math 142, Frank Thorne (thornef@mailbox.sc.edu)

Due Friday, September 20

Thompson: Read Chapters 8 and 9, although you don't have to read all of the worked examples in detail. "A useful dodge" is of course u-substitution. How do Thompson's and Stewart's treatments differ, and why does Stewart give a more complicated explanation?

(a) What is an *improper integral*? What makes it improper? Give at least two examples that describe different types of improperness.

(b) What does it mean for an improper integral to *converge* or *diverge*? Give examples of both.

(c) Stewart, 7.8, 1-2 (**please explain carefully in complete sentences**), 3, 5-16, 65.

(d) Stewart, 6.1, 1-12. In 1 and 2, additionally draw lots of small rectangles and carefully explain why your integral gives you the area.

Additional problems:

(a) Stewart, 7.8, 17-22; 6.1, 13-18.

Bonus (2 points):

(a) Stewart, 7.8, 75, 81; 6.1, 47.