Homework 9 - Math 141, Frank Thorne (thornef@mailbox.sc.edu)

(a) Thomas, 4.8, 25-40, 91-98 (even required, odd additional), 119-122.

(b) Thomas, 5.1, 1-10, 19-20 (even required, odd additional).

(c) What is an indefinite integral? Explain thoroughly.

(d) What is a definite integral? Explain thoroughly and draw a picture.

(e) Evaluate $\int_0^4 \sqrt{4-(x-2)^2}dx$ using geometry.

(f) Evaluate $\int_0^4 \sqrt{4x-x^2}dx$ using geometry.

(g) Evaluate $\int_0^3 4xdx$ using geometry.

(h) Evaluate $\int_{-2}^0 3xdx$ using geometry.

(i) Evalute $\int_{-4}^4 \frac{x}{2}dx$ using geometry.

(j) Evaluate $\int_{-2}^5 (x+3)dx$ using geometry.

(k) What does the Fundamental Theorem of Calculus say, and why is it true? Explain carefully and throughly.

(l) What is the Net Change Theorem? Explain its relationship to the Fundamental Theorem of Calculus.

(m) Is the integral $\int_{-1}^4 \frac{1}{x^2}dx$ defined? Why or why not?

(n) Is the integral $\int_{-1}^4 x^2dx$ defined? Why or why not?

(o) Is the integral $\int_{-1}^4 0dx$ defined? Why or why not?

(p) Thomas, Ch. 5.3, 55-60. (Even required, odd additional.)