

Homework 10 - Math 141, Frank Thorne (thornef@mailbox.sc.edu)

Due Friday, November 13

- (a) What is an indefinite integral? Explain thoroughly.
- (b) What is a definite integral? Explain thoroughly and draw a picture.
- (c) Evaluate $\int_0^4 \sqrt{4 - (x - 2)^2} dx$ using geometry.
- (d) Evaluate $\int_0^4 \sqrt{4x - x^2} dx$ using geometry.
- (e) Evaluate $\int_0^3 4x dx$ using geometry.
- (f) Evaluate $\int_{-2}^0 3x dx$ using geometry.
- (g) Evaluate $\int_{-4}^4 \frac{x}{2} dx$ using geometry.
- (h) Evaluate $\int_{-2}^5 (x + 3) dx$ using geometry.
- (i) What does the Fundamental Theorem of Calculus say, and why is it true? Explain carefully and thoroughly.
- (j) What is the Net Change Theorem? Explain its relationship to the Fundamental Theorem of Calculus.
- (k) Is the integral $\int_{-1}^4 \frac{1}{x^2} dx$ defined? Why or why not?
- (l) Is the integral $\int_{-1}^4 x^2 dx$ defined? Why or why not?
- (m) Is the integral $\int_{-1}^4 0 dx$ defined? Why or why not?
- (n) Thomas, Ch. 5.3, 55-60. (Even required, odd additional.)
- (o) Thomas, Ch. 5.4, 5-16, 59-64, 71-76 (Even required, odd additional.)