Exam 5 Topic List

Approximating Area Under the Curve

- Approximate integrals with Riemann sums (right, left, midpoint)
- Approximate integrals with trapezoids
- Uneven intervals!!
- Squiggly equals!!

Definite Integrals

- Evaluating integrals using geometric area formulae (NOT approximations!!)
- Properties of integrals (see pages 379 – 380)

Indefinite Integrals

- Indefinite integrals (#2 – 13, 16, 17 from the Table of Integrals on Reference Page 6 located in the back of your textbook)

FTC

- FTC #2: $\int_a^b f(x)\,dx = F(b) - F(a)$, where F is the antiderivative of f
- Find definite integrals of absolute value functions
- FTC #1: $\frac{d}{dx}\int_a^{u(x)} f(t)\,dt = f\left(u(x)\right)u'(x)$
- Finding f, f', and f'' for integral-defined functions given a graph of the integrand
- Finding intervals of increase/decrease and concavity, extreme values, and points of inflection for integral-defined functions given a graph of the integrand

Total/Net Change

- General Total/Net Change Theorem applications
- Rectilinear Motion (specifically displacement, distance, and final position)
- Interpretation of an result obtained through definite integration, including units of measure
- Don't forget to consider initial conditions!!

***u*-Substitution**

- Apply *u*-substitution technique to both indefinite and definite integrals
- Integrals of general arcsine and arctangent
- Distinguish between the four major types of rational-form integrals (negative power, natural log, arcsine, and arctangent)