

Exam 6 Topic List

Average Value

- Determine the average value of a function
- Review from Unit 5: Find integrals from graphs and approximate integrals with Riemann sums and trapezoids
- Find the average value within an application

Area Between Curves

- Find area between curves using both dx and dy integration
- Find area between curves using more than one integral expression

Volume by Cross Sections

- Calculate volume of solids whose cross-sectional areas are: squares, semicircles, equilateral triangles, and right isosceles triangles with one leg in the xy -plane
- Calculate volumes for the above using both dx and dy integration

Volumes of Revolution

- Calculate volumes of solids of revolution using: both dx and dy integration, washer and disc methods, revolutions about any axis of the forms $x = a$ and $y = b$
- BONUS: Hard volume problem that can be solved using multiple integrals or by shell method (see section 6.3 for shell method)

Introduction to Differential Equations

- Determine whether a function is a solution to a given diff eq

Slope Fields

- There are no specific questions over slope fields on the Unit 6 Exam
- We will assess slope fields on the final – study those matching questions on Supplement 6.6!!
- We will re-visit slope fields in BC, so don't forget about them!!

Solving Differential Equations

- Solve both general and particular solution diff eqs using separation of variables
- Determine the limiting value of a particular solution

Applications of Diff Eqs

- Solve applications involving exponential growth and decay, and Newton's Law of Cooling
- Note: You do not have to re-solve the diff eqs that lead to the results for growth and decay or Newton's Law of Cooling. You can begin with the solutions (i.e, $y = Ce^{kt}$ for growth and decay, and $T = Ce^{kt} + T_e$ for Newton's Law of Cooling).