

Final Review

My reviews and review sheets are not meant to be your only form of studying. It is vital to your success on the exams that you carefully go through and understand ALL the homework problems, worksheets and lecture material. Hopefully this review sheet will remind you of some of the key ideas of these sections. This review does not contain details. To see more detail see the previous review sheets.

1. Integration

- u-substitution
- integration by parts
- integration of trigonometric functions
- trigonometric substitution
- partial fractions
- improper integrals
- approximating integrals (Midpoint, Trapezoid, Simpsons)
- definite and indefinite integrals and both parts of the fundamental theorem of calculus

2. Exam 1 Applications

- areas between curves
- volumes of revolution using slicing or shells
- acceleration, velocity, distance
- displacement and total distance

3. Exam 2 Applications

- work (springs, cables, pumping water)
- average value of a function
- arc length

4. New Applications

- center of mass (centroid)
- differential equations
 - what is a solution?
 - be able to separate variables, integrate and solve for the function
 - understand how to use initial conditions to solve for the undetermined constant