

MA 242 Test 3 Review Sheet

Section 4.1 Double Integrals over Rectangles:

- Know the definition of a double integral
- Be able to set up and evaluate double integrals over a rectangular region R
- Be able to set up & integrate double integrals over a region D
- Be able to find volumes using double integrals
- Be able to sketch a region D and change the order of integration
- Examples p. 34: 3, 5, 9, 11, 12, 13, 15, 17 and the problems from in class and webassign.

[Double Integral practice](#)

Section 4.2 Applications of Double Integrals

- Given a density function, be able to find the mass, moments, and center of mass of a lamina. Find the average value of $f(x,y)$ over D
- Examples p. 50: 3, 9, 15, 23

Section 4.3 Triple Integrals:

- Be able to set up and evaluate triple integrals, find volume using triple integrals, and find mass and center of mass of a solid F given a density function. Know the average value of $f(x,y,z)$ over the region F
- Examples p. 32: 8, 11, 17, 19, 21

[Triple Integral Practice](#)

Section 5.1: Double Integrals in Polar Coordinates

- Know how to change from rectangular to polar coordinates
- Examples p. 19: 1,3,5,7,9,11,12,17

[Polar Coordinate Practice](#)

[More Help with Polar Coordinate Bounds](#)

Section 5.2: Triple Integrals in Cylindrical Coordinates

- Know how to convert from rectangular to cylindrical coordinates
- Examples p. 32: 7,12,13,21, and the problems from in class and webassign

Section 5.3: Triple Integrals in Spherical Coordinates

- Know how to convert from rectangular to spherical coordinates
- Examples p. 44: 5, 9,10,11,13, and the problems from in class and webassign.

[Triple Integral Worksheet](#)

[More Help with Spherical Coordinate Bounds](#)

Other Helpful Information for the Test:

- See the [Graphing Surfaces Worksheet](#)
- Sin and Cos at basic angles (See the [Trig Basics](#))

Worksheet)

- U-substitution
- Integration by Parts