

## Math 324 Exam 2 Checklist

### 1. 15.9: Change of Variable

- Computing and using a transformation. (HW 4/1-4)

### 2. 14.5: The Chain Rule

- Using the chain rule. (HW 4/5-11)

### 3. 14.6: Directional Derivatives and Gradients

- Computing the gradient. (HW 5/1-5)
- Computing directional derivatives. (HW 5/1,2,5)
- Understand the significance of the gradient. (HW 5/3-5)

### 4. 16.1: Introduction to Vector Field

- Know the basic terminology and be able to work with vector fields. (HW 5/6-8)

### 5. 16.2: Line Integrals

- Compute a line integral for a scalar function with respect to arc length. (HW 5/9,11,14,19)
- Computing line integrals over a vector field (and examples directly with respect to  $x$  and  $y$ ). (HW 5/10,12,13,15-18)
- Parameterizing curves. (HW 5/9-14,18,19)

### 6. 16.3: Conservative Vector Fields

- Be able to test if a vector field is conservative. (HW 6/1-4 and HW 7/4,5)
- Finding the potential function for a conservative vector field. (HW 6/1-7, HW 7/4)
- Using the potential to evaluate a line integral. (HW 6/6,7)
- Some set terminology basics. (HW 6/8-9)

### 7. 16.4: Green's Theorem

- Be able to use Green's Theorem. (HW 6/10-16)

### 8. 16.5: Curl and Div

- Be able compute curl and div. (HW 7/1-2)
- Know the input and output of each operation. (HW 7/3)
- Be able to check if a vector field is conservative (as mentioned above). (HW 7/4,5)
- Be able to determine if a vector field is the curl of another vector field. (HW 7/6)

### 9. 16.6: Parameterizing Surfaces

- Be able to parameterize surfaces. (HW 7/7-10)
- You should also look at the examples from the text, examples from lecture, examples from my review sheet, and other examples from the problems in the book.