

# MAT1300 Final Exam Review-Section A & B

## 1 Material

Here is a list of topics to cover the last part of the course. Combined with the other two topics lists, you have a complete set of topics. Note that the final exam is cumulative, and will cover the material of the entire year.

Sections from the book (8th Edition):

- Chapter 5:
  - 5.4: Area
  - 5.5: Area between two curves
- Chapter 6:
  - 6.1: Integration by parts and present value
  - 6.5: Improper integrals
- Chapter 7:
  - 7.1: 3D coordinate system
  - 7.2: Surfaces
  - 7.3: Functions
  - 7.4: Partial derivatives
  - 7.5: local extrema

## 2 Topics

Key concepts from Chapter 5 (last two sections):

1. setting up integrals to represent area. What are the endpoints?
2. calculating area between two curves. What are the endpoints? What is the function to integrate?
3. consumer and producer surplus.

**Announcement: There will be an area between two curves question on the final. You will have to graph the curves, shade in the right region, and calculate its area.** For practice, do the questions on the last 3 final exams.

Key concepts from Chapter 6:

1. integration by parts. **KNOW THE FORMULA**
2. Present value.
3. improper integrals. Remember there are several types. Know the case where one of the endpoints is a vertical asymptote.
4. Present value again. See p. 467.

Key concepts from Chapter 7:

1. basic formulas for midpoints, distance etc. as found in 7.1
2. domains
3. level curves
4. partial derivatives (know how to calculate them), higher-order derivatives.
5. max-mins. How do you find critical points? How do you know what kind they are?  
**Know that theorem**, Theorem on page 519.

**Announcement: There will be a max-min question for a function of two variables on the final.** For practice, do the questions on the last 3 final exams.