## Integration exam

The exam will cover Chapters 5 and 6. Details below.

The exam will be "practical" –meaning that you will show what you know through your work on particular problems. For example, you would demonstrate knowledge of the Second Fundamental Theorem of Calculus when finding the volume of a particular solid, because you use the Second Fundamental Theorem of Calculus to evaluate the integral.

Similarly, you will show your understanding of the four theorems mentioned under the heading "Evaluating Definite Integrals" by evaluating definite integrals. You will not be asked to state or prove the theorems. In fact, you do not even need to mention when you are using them.

The exam problems will be quite similar to the problems assigned in the textbook exercises. If you can do the assigned problems efficiently and without much hesitation, you should do well on the exam.

**Section 5.1 Indefinite integral $\longrightarrow$ All of it.**

**Section 5.2 First order separable differential equations $\longrightarrow$ All of it.**

**Section 5.3 Sums and summation notation $\longrightarrow$ Skip.**

**Section 5.4 Introduction to area $\longrightarrow$ Skip.**

**Section 5.5 Definite integral**

- Definition page 236.
- Theorem A page 237.
- Theorem B page 239.

**Section 5.6 First Fundamental Theorem of Calculus**

- Theorem A page 244.
- Theorem B page 245.
- Theorem C page 245.
- Theorem D page 245.

**Section 5.7 Second Fundamental Theorem of Calculus**

- Theorem A (Second Fundamental Theorem of Calculus) page 251.
- Theorem B (Mean Value Theorem for Integrals) page 255.

- Theorem C page 245.
- Theorem D page 245.

**Section 5.8 Evaluating Definite Integrals**

- Theorem A page 259.
- Theorem B page 260.
- Theorem C page 261.
- Theorem D page 262.

**Section 6.1 Area of a Plane Region $\longrightarrow$ All of it.**

**Section 6.2 Volumes of solids: Slabs, Disks, Washers**

- Only the volume of a solid of revolution. There will be no questions like Example 5 and Example 6.

**Section 6.3 Volumes of solids: Shells $\longrightarrow$ All of it.**

**Section 6.4 Length of a Plane Curve**

- You will be given the equations for a curve whose length you must find. You will not be asked to find the equations. For example, you may be asked find the length of one arch of the cycloid, given the equations for the cycloid. You will not be asked to derive those equations.
- All including the area of a surface of revolution (page 298)