

Prepare for the Final Exam

Time: May 10 from 12:40-2:55

The Exam will cover all the material covered on the first three Exams (from **Section 10.1 to Section 12.8**, with the previously indicated omissions).

Only those types of questions which appeared previously on Exams will appear on the Final. Only those definitions and theorems which is specifically asked you to understand on one of the three Exams will appear on the Final. There will be some questions regarding the material from Sections 13.2-13.5.

13.2: Be able to find line integrals.

13.3: (1) Be able to use the FTC to find line integrals.

(2) Be able to verify if a vector field is conservative.

(3) Be able to compute the work done by moving a particle in a conservative vector field.

13.4: Be able to use Gree's theorem for computations.

13.5: Be able to compute $\text{curl}(F)$ for a vector field and tell if a $3d$ -vector field is conservative.

Review problems: page 831 problems 2-7 and 11-12.

A suggested method of preparation for the final:

1. spend about 1 hour just leisurely reading your course notes from the entire semester.
2. Read carefully about the guides for 3 previous Exams and for 10.1-12.9.
3. Do the examples given in the guides.
4. " Retake" the three Exams. This is done by covering up your answers from previous Exams, and redoing the problem as stated. When you complete an Exam, compare your answers to those on the answer sheet.
5. If during this retake you have answered a question correctly, you should probably not spend any time reviewing the corresponding material; you are familiar enough with it to do well on the Exam.
6. If during this retake you have answered a question incorrectly, you should make sure you understand the answer presented in the answer sheet. Then go to the appropriate section in the homework, and redo a few similar homework problems (especially those which were assigned to be turned in). Compare your homework answers to those already graded, and to the answer in the book. If you now feel comfortable with this material, redo the original Exam question to test your skill. If you redo it correctly, your review is over. If you are still having trouble, do more problems of that type, see me, etc...
7. Review 13.2-13.5.

Prepare for Exam III (Math 2350)

Time: 1:40-2:55, April 15, 2016.

This Exam will cover sections 11.8, 12.1-12.3 and 12.5-12.6, 12.8.

11.8 Be able to use the Lagrange method to solve extremum problems with a constraint.

12.1-12.3

1. Know the definition of the double integral over a rectangle.
2. Know the geometrical interpretation of double integral.
3. Be able to use the iterated integral formula to evaluate the double integrals on type I or II regions.
4. Be able to use the polar coordinates to evaluate double integrals.
5. Be able to find the area of a given region.

12.5-12.6 and 12.8

1. Know the definition of the triple integral over a 3D box.
2. Be able to use the iterated integral formula to evaluate the triple integrals.
3. Be able to find the volume of a given region.
4. Be able to use cylindrical coordinates to evaluate triple integrals.
5. Be able to find the image of a region mapped by a transformation.

To Prepare for Exam II
(Math 2350)

Time: 1:40-2:55, 3/11/2016.

This Exam will cover sections 11.1-11.7, inclusive.

11.1

- (1) Know the definition of two variable functions.
- (2) Be able to find domains.

11.2

- (1) know the definitions of limits and continuity.
- (2) Be able to compute limits.
- (3) Be able to use the two path test to tell discontinuous points.

11.3

- (1) Know the geometrical interpretations of partial derivatives.
- (2) Be able to find partial derivatives.

11.4

- (1) Be able to find tangent planes.
- (2) Be able to use differentials to do approximations.

11.5

- (1) Be able to use the chain rule to compute partial derivatives.
- (2) Be able to do implicit differentiation.

11.6

- (1) Know the geometrical interpretations of directional derivatives.

- (2) Be able to compute the directional derivatives.
- (3) Be able to find gradient vectors.
- (4) Be able to compute the maximum rate of change.
- (5) Be able to find tangent planes and normal lines for an implicit equation.

11.7

- (1) Be able to find local extrema.
- (2) Be able to find the absolute extrema in a region.
- (3) Be able to solve some word problems.

Prepare for Exam I (Math 2350) 1:40-2:55, 2/12. Friday.

This Exam will cover sections 10.1-10.5 and 10.7-9, inclusive.

Section 10.1.

- (1) Know the definition of the 3D systems.
- (2) Be able to use the distance formula.
- (3) Be able to compute the equation of a sphere.

Sections 10.2-10.4

- (1) Know the definition of vector.
- (2) Be able to do addition, scalar multiplication, dot product, cross product of two vectors.
- (3) Be able to prove the properties of the dot and the cross products (see page 551 and page 562).
- (4) Be able to use the dot product to decide the angle of two vectors.
- (5) Be able to compute the work.
- (6) Be able to use cross product and dot product to find the area of a 3D triangle and the volume of a parallelepiped by three vectors.

Section 10.5.

- (1) Be able to write down the equations of lines and planes.
- (2) Be able to tell whether two lines are parallel, or orthogonal, intersect or not.
- (3) Be able to compute the distance of a point and a plane.

Sections 10.7-10.9.

- (1) Know the definition of vector equation.
- (2) Be able to find the derivatives and integrals of vector functions.
- (3) Know the geometric meaning of tangent vector and be able to find it.
- (4) Be able to find curvatures for some curves.
- (5) Be able to find the position, velocity and acceleration functions.