

18.02 EXAM 3 SUMMARY Spring 2006

A. Topics on Exam 3 will be

1. Evaluate an iterated integral; sketch the region of integration; exchange order of integration.

2. Find a moment of inertia or a (weighted) average value. Average value includes center of mass as a special case.

3. curl 0 test for conservative fields; finding potential functions; applying the fundamental theorem of calculus for line integrals.

4. parametrize curves so as to compute line integrals directly; compute them indirectly using Green's theorem.

5. change of variables in double integrals; use this to calculate integrals.

B. Topics that will **not** be on this exam, but you will see later are: probability; triple integrals; spherical and cylindrical coordinates

C. The table of integrals from Notes 3B will be printed on the front of the exam. We are not aiming to give you complicated integrals to evaluate. On this exam and the ones that follow, you should look out for the possibility that symmetry may show that an integral is zero. Also, you should feel free to quote a known fact such as the total area of a disk of radius a is πa^2 , without carrying out an integral.

When you substitute, say $u = \sin \theta$, remember to do so on an interval on which the change of variables does not double back on itself. $0 \leq \theta \leq \pi$ does not work, but $-\pi/2 \leq \theta \leq \pi/2$ does.