

Review Sheet for Exam 2

Standard disclaimer: The following represents a sincere effort to help you prepare for our exam. It is not guaranteed to be perfect. There might well be minor errors or (especially) omissions. These will not, however, absolve you of the responsibility to be fully prepared for the exam. If you suspect a problem with this review sheet, please bring it to my attention (bounty points are possible).

Review: I will use my office hours on Wed April 6 to answer questions about the exam.

Time and place: The exam will take place Thursday April 7 in class. As usual, you'll have til a bit before 5 PM to finish. It will cover integration on curves and surfaces, including the linear algebraic preliminaries concerning 1-forms and cross-products. This material is summarized in sections 6-8 of my class notes and some of it is treated in Shifrin sections 1.5, 3.5, 8.3, and 8.4 (esp 8.4.1-2). Unfortunately, integrals on surfaces are treated somewhat differently in section 8.4 of Shifrin, so you'll need to rely more on my notes and lectures for this.

Ground Rules: the exam is closed book and no calculators are allowed. All you'll need are sharp pencils and a good eraser. No pens please!

Format: Similar to previous midterms. Not much true/false stuff this time.

Some specific topics to give attention to: understand well the relationship between closed and exact one forms; understand the statements and proofs of the fundamental theorem of Calculus for curves, of Green's Theorem, and of the facts about the effect of reparametrization on line/arc-length integrals; know how to pull back a one form and to compute the flux of a vector field through a surface.

Things you can ignore: You won't need to know the various classical versions of Fundamental Theorem of Calculus in \mathbf{R}^2 and \mathbf{R}^3 . You won't need to know the definition of divergence or curl of a vector field.