

Math 220 Review Sheet for Exam 2

Time and Place of Exam:

Wednesday, December 4, 9:00–9:55 AM
MSB 311

Coverage:

Text Sections 4.3–4.7, 4.9, 4.10, 5.1–5.3, 5.5–5.8

Things to Bring to the Exam:

- Sharpened pencils and an eraser. *Use a pen at your own peril!*
- A calculator that does *not* store alphanumeric formulas (For instance, a TI-80 series calculator [except TI-89] is ok, but not a TI-92 or HP-48.)

Review Suggestions:

- * For practice, try the review worksheet and as many of the following as time allows: Review Exercises 4.11 (Exercises 5–8, 10–14, 17–20, pp. 229–230) and Review Exercises 5.12 (Exercises 1–22, pp. 326–327) *without referring to notes or earlier parts of the chapters*. Doing them with other students will help you and them master the material.
- * Rework worksheets and quizzes on Chapters 4 and 5 with books and notes closed.

Major points to concentrate on:

- Section 4.3: Definition 4.3' (as given in class) and how to apply it as in Example 3.6, Theorems 3.7 and 3.10 and their use (as in Exercises 1–9).
- Section 4.4: Theorems 4.2 and 4.4 and how to use them to find the directional derivative at a given point in the direction of a given vector, and how to find the direction and maximum rate of increase/decrease of a differentiable function at a given point.
- Section 4.5: Chain Rules 5.3, 5.7, 5.8 and how to use them to calculate partial and total derivatives of composite functions; Definition 5.10 and how to apply it.
- Section 4.6: How to find partial derivatives of an implicitly-defined function and use them to estimate values of such functions near a known point on the graph (as in Examples 6.1, 6.4).
- Section 4.7: How to calculate higher partial derivatives of a function; Theorem 7.5.
- Section 4.9: Theorem 9.7 and its use as in Examples 9.8 & 9.9, pp. 216–217.
- Section 4.10: Lagrange-multiplier methods (Algorithms 10.2 & 10.6) and their use in problems like Examples 10.3, 10.4, 10.7.
- Sections 5.1–5.2: Basic properties of double integrals (Definitions 1.1, 2.1, 2.3, Theorems 1.5, 1.6, 1.8, and 2.4, Corollary 1.3) and how to use them to work problems like the examples and assigned exercises.
- Sections 5.3, 5.5: Definitions 3.1, 3.2, and 5.1, Theorems 3.4 and 5.2, and their use in problems like the examples and exercises.
- Section 5.6: Definition 6.1, Theorems 6.3 and 6.5 and their implementation to evaluate triple integrals: use of Equations (3), (4), and (5) on pp. 272–273 as in the assigned exercises.
- Sections 5.7–5.8: Definitions 7.1 and 8.1, 7.3 and 8.4, Theorems 7.4, 7.6 and 8.5, Formulas (1), p. 280 and Proposition 8.2, and their use in the examples and exercises.