

Exam 4 Review Sheet Calc 2 4/19/2005

Format: As always, 10 problems with generally ascending difficulty, plus an extra credit opportunity.

Prerequisites: As always, the exam is comprehensive over everything since kindergarten. In particular, basic derivatives needed for checking solutions to differential equations and the integration necessary for separation of variables will be important.

Content: The exam will cover §11.1 through §11.8 and the real-valued case in §11.11.

- ▶ Know what it means to be a solution to a differential equation.
- ▶ Understand what slope fields are and what they tell about a differential equation.
- ▶ Understand what Euler's method is and be able to use it.
- ▶ Be able to solve differential equations by separation of variables.
- ▶ Be ready to deal with the various situations we've used differential equations to model.
- ▶ Be able to solve second order differential equations using a characteristic polynomial (for the case where the roots are real).
- ▶ Know what it means to be a solution to a system of differential equations.
- ▶ Understand the distinction between general and particular solutions, and be able to turn the former into the latter.
- ▶ Understand what an equilibrium is and how to find it.
- ▶ Know the various patterns of growth we've discussed, like exponential growth/decay and logistic growth.

Grading: As always, each problem is worth 10 points.

- ▶ 10 points indicates complete, accurate, and adequately justified completion of a problem.
- ▶ Isolated mistakes within an otherwise valid solution generally cost about a third of the points possible (3 or 4 points out of 10).
- ▶ Even if you can't complete a problem, make an effort to indicate to me how much you know so I can gauge credit accordingly.
- ▶ Pay attention to what's asked for: You don't need to waste time working out integrals if you're only asked to set them up. Providing a decimal approximation when an exact value is requested, or vice versa, costs you points. Pay attention to the difference.

Resources: You can use the table of integrals if you want to.

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