Use the following list of questions as a quide in your review of material of Math 46:

- *The exam is on Friday, 03/22, 3:00 pm – 6:00 pm.*
- *In the exam, you have to show every step of your calculation.*
- *A cheeting will cause a serious consequence even for your whole life.*

(1) What is a differential equation?
(2) What is the general solution of a differential equation?
(3) What is an initial value problem?
(4) What is a first order differential equation?
(5) What is a separable differential equation?
(6) What is a linear equation?
(7) What is a homogeneous equation?
(8) What is an exact equation?
(9) What is a second order differential equation?
(10) What is a numerical solution of a differential equation?
(11) What is Euler method?
(12) What is a fundamental set of solutions of a second order linear homogeneous differential equation?
(13) What is the principle of superposition for homogeneous linear differential equations?
(14) For second order linear differential equations, how are the solutions of the nonhomogeneous ones related with the solutions of the corresponding homogeneous equations?
(15) What is the differential equation describing the continuous compounding problem?
(16) Use plain English to describe the meaning of the differential equation given in a Mixing model.
(17) What is the differential equation describing an exponential growth?
(18) What is the differential equation describing a logistic growth?
(19) What is an improper integral?
(20) What is the Laplace transform?
(21) What is the inverse Laplace transform?
(22) How do you use the Laplace transform to solve differential equations?

Review Problems:

§**2.1:** 13, 16, 18. §**2.2:** 9, 11, 15, 18. §**2.3:** 1, 6, 7, 9. §**2.5:** 15, 20, 21. §**2.6:** 1, 4, 8, 10. §**2.7:** 12, 13. §**3.1:** 1, 2, 5, 6, 9. §**3.4:** 1, 3, 18, 22. §**3.5:** 1, 2, 23, 24. §**3.6:** 1, 2, 7, 13. §**3.7:** 3, 5, 13. §**6.1:** 5, 7, 11, 13. §**6.2:** 1, 3, 7, 11, 12.