Math 3430 Section 1 Spring 2019 Final Exam topics

1. List of topics to review

(1) Classifying ODE based on order and linearity, Section 1.1 (and see Section 2.1 below)
(2) Existence and uniqueness, Section 1.2 (Do not have to memorize the theorem, just know how to work with it as before.)
(3) Separable equations, Section 1.3
(4) Integrating factor, Section 1.4
(5) Bernoulli Equations, Section 1.5
(6) Exact equations, Section 1.5
(7) Definition of a Linear Operator, Section 2.1
(8) Classifying ODE as homogenous/inhomogenous, Section 2.1
(9) Linear Independence: Wronskian, Theorem 3, Section 2.2
(10) Knowing and understanding the statement of Theorem 2 and Theorem 4 in Section 2.2; Understanding proof of Theorem 4, see HW7.
(11) Second order, homogenous equations with constant coefficients, Section 2.3
(12) The method of the undetermined coefficients, Section 2.5
(13) Converting a system of ODE to a single ODE and vice versa, Section 7.1, 7.2 & Section 2.1

1.1. **You can expect the following questions on the Final Exam.**

- A question on using the Laplace transform to solve an ODE, Sections 3.1-3.5 (the Laplace Transform formulas will be provided as before).
- A question on solving a linear homogeneous system, Section 7.3

2. List of topics that will NOT be on the final

(1) No stability/equilibrium question
(2) No direction field question
(3) No substitution questions regarding homogenous equations, Section 1.5.
(4) No variation of parameters
(5) No defective eigenvalues

Good luck!