Name:_____
M555: Differential Equations I (Spring 2018)
Instructor: Justin Ryan
Concept Check: Chapters 3 and 4

WICHITA STATE UNIVERSITY

Instructions *Complete these problems in groups. Be sure to show enough work.*

For the exam on Monday, 5 March, you must be able to solve second and higher order DE using the following methods.

1. Reduction of Order
2. Undetermined Coefficients
3. Variation of Parameters

The following three problems can each be solved by (at least) one of these methods. Identify the method, then properly apply it to obtain the solution.

---

1. Find the general solution of the DE.

$$y''' - 2y'' - y' + 2y = e^{4t}$$

2. Find the general solution of the DE

$$xy'' - y' + 4x^3 y = 0, \quad x > 0,$$

where $y_1(x) = \sin(x^2)$ is a solution.

3. Find the general solution of the DE.

$$y'' - 2y' + y = \frac{e^t}{1+t^2}$$