

Math 242, Exam 3, Spring, 2017 11:40 class

Write everything on the blank paper provided. **You should KEEP this piece of paper.** If possible: return the problems in order (use as much paper as necessary), use only one side of each piece of paper, and leave 1 square inch in the upper left hand corner for the staple. If you forget some of these requests, don't worry about it – I will still grade your exam.

The exam is worth 50 points. Each problem is worth 10 points. Please make your work coherent, complete, and correct. Please CIRCLE your answer. Please **CHECK** your answer whenever possible.

The solutions will be posted later today. The exams will be returned in class on Thursday, March 30.

No Calculators or Cell phones.

- (1) Consider the initial value problem $\frac{dy}{dx} = y^2 + \frac{1}{x}$, $y(3) = 1$. Use Euler's method to approximate $y(32/10)$. Use two steps, each of size $1/10$.
- (2) Find the general solution of $y'' + 6y' + 9y = 0$.
- (3) Find the general solution of $y'' + 3y' + 2y = e^x$.
- (4) Find the general solution of $\frac{dy}{dx} - \frac{1}{x}y = xy^2$.
- (5) Solve the initial value problem $y'' - y' - 2y = 8e^{3x}$, $y(0) = -1$, $y'(0) = 11$.