



- ★ Homework #4, review of second first-order ODEs, homogeneous constant coefficient case
- ★ Please prepare to present your solutions to class in the next meeting.
- ★ Solve each differential equation.
- ★ Specify the characteristic equation, determine which case applies:  
(a) Two distinct roots (b) Two identical roots (b) Two complex conjugate roots
- ★ Practice using Desmos to verify your answers.
- ★ Students on path to a Ph.D. want to practice typing up the answers and including graphs using  $\text{\TeX}$ .
- ★ Quiz 1: Sept 20, HW 1-4. Open Notebook exam. Handwritten lecture material, homework problems, handwritten tables of integration or differentiation are allowed.
- ★ Practice making screen shots from Desmos or Dfield to submit via email as a part of an exam.

1-  $y'' + 9y' + 36y = 0$

2-  $y'' + 5y' + 2y = 0$

3-  $y'' + (2a + 1)y' + (a^2 + a)y = 0$

4-  $y'' + 7y' + 12y = 0, y(0) = 3, y'(0) = 4$

5-  $y'' + 4y' + 4y = 0, y(0) = 1, y'(0) = 2$

6-  $y'' + 6y' + 25y = 0$

7-  $y'' + 8y' + 41y = 0, y(0) = 1, y'(0) = 2$

8-  $y'' = 0, y(0) = 7, y'(0) = 11$

9-  $2y'' + 10y' = 0$

10-  $y'' + 25y = 0, y(0) = 1, y'(0) = 2$

11-  $y'' - 36y = 0, y(0) = 1, y'(0) = 2$