

HOMEWORK 4
DUE: WEDNESDAY, JUNE 3

For each of the following problems,

- (1) Find the general solution
- (2) Use the Wronskian to show that the solutions you obtained are fundamental
- (3) Solve the IVP
(for complex roots express the solutions in the form $A \cos(\omega t - \phi)$)
- (4) Describe the behavior of the solution as t increases

1. $y'' + 3y' = 0$,
 $y(0) = -2, y'(0) = 1$
2. $y'' + 2y' - 8y = 0$,
 $y(0) = -6, y'(0) = -18$
3. $y'' - 4y' + 4y = 0$,
 $y(0) = 12, y'(0) = -3$
4. $y'' + 4y' + 5y = 0$,
 $y(0) = 1, y'(0) = 0$
5. $y'' - 4y' + 9y = 0$,
 $y(0) = 0, y'(0) = -8$
6. $y'' + 4y = 0$,
 $y(0) = 0, y'(0) = 1$
7. $4y'' - y = 0$,
 $y(-2) = 1, y'(-2) = -1$
8. $16y'' - 40y' + 25y = 0$,
 $y(0) = 3, y'(0) = -9/4$
9. $y'' + 14y' + 49y = 0$,
 $y(0) = -1, y'(0) = 5$
10. $y'' + 2y' + 2y = 0$,
 $y(\pi/4) = 2, y'(\pi/4) = -2$