

HW4

### Section 3.1

- ① Solve  $y'' + 2y' - 3y = 0$
- ② Solve  $y'' - 9y' + 9y = 0$
- ③ Find a differential equation whose solution is  
$$y = c_1 e^{2t} + c_2 e^{-3t}$$
- ④ Find solution to initial value problem

$$2y'' - 3y' + y = 0 \quad y(0) = 2 \quad y'(0) = \frac{1}{2}$$

Plot the solution for  $0 \leq t \leq 2$  and determine its minimum value.

### Section 3.2

- ⑤ Find the Wronskian of  $e^{2t}$  &  $e^{-3t/2}$
- ⑥ Determine the largest interval  $I$  in which the given differential equation is certain to have a unique and twice differentiable solution. (You don't have to find the explicit solution)

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$$ty'' + 3y = t, \quad y(1) = 1 \quad y'(1) = 2$$

⑦ If the Wronskian  $W$  of  $f$  and  $g$  is  $t^2 e^t$  and if  $f(t) = t$ , find  $g(t)$