Math 3350

Home Work 4

① Solve the following:

$$4\frac{d^2y}{dx^2} - 4\frac{dy}{dx} - 3y = 0$$

$$y(-2) = e$$

$$y'(-2) = -e/2$$

② Solve the following:

$$4\frac{d^2y}{dx^2} - 4\frac{dy}{dx} + 3y = 0$$

$$y(-2) = e$$

$$y'(-2) = -e/2$$

③ Solve the following Euler Cauchy equation:

$$x^2\frac{d^2y}{dx^2} - x\frac{dy}{dx} + 2y = 0$$

④ calculate the Wronskian between the two functions:

(i) $e^{\lambda x}, xe^{\lambda x}$

(ii) $e^{-x}\cos\omega x, e^{-x}\sin\omega x$

(iii) $x^4, x^4 \ln x$

⑤ using solution by undetermined co-efficient

solve

$$\frac{d^2y}{dx^2} + 10\frac{dy}{dx} + 25y = e^{-5x}$$

⑥ using solution by variation of parameters

solve

$$\frac{d^2y}{dx^2} + y = \sec x.$$